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ABSTRACT

The papers and discussion generated by exchange visits of American and Soviet educators are reprinted or summarized. The purpose of the visits was to exchange information and to study each country's system of higher education. Seminars held in the United States concentrated on two topics: selection and guidance of students in higher education, and the meaning of the undergraduate degree. The topics chosen for the seminars held in the Soviet Union were manpower planning for higher education purposes, and nontraditional forms of higher education. Papers presented in the United States were: Guidance, Selection, and Access to Higher Education in the United States; Methods of Direct (Short-Term) and Extended (Long-Term) Selection of Students for Enrollment in Institutions of Higher Education; American Higher Education and the Bachelor's Degree; and On the Comparability of Levels of Education in the U.S.S.R. and Foreign Countries. Papers presented in Russia were: New Forms of Higher Education in the U.S.S.R.; An Introduction to Non-Traditional Education in the United States; Methodological Issues in the Forecasting and Long-Range Planning of Training of Specialists with Higher Education; and Manpower Forecasting for Work and for Society. Summaries of discussions are also presented. (MH)

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REPORT OF AN EXCHANGE BETWEEN THE UNITED STATES AND THE SOVIET UNION IN THE AREA OF HIGHER EDUCATION

Robert A. Feldmesser

Editor

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PREFACE

William W. Turnbull

Educational Testing Service was pleased to be able to take a leadership role in organizing an exchange of delegations in 1976 between the United States and the Soviet Union in the area of higher education. It was our belief that a sharing of knowledge, views, and experience among educators and researchers of the two countries would benefit not only those directly involved but also the students, faculties, and societies that are served by higher education.

It is a challenge for citizens of two nations so diverse in their political, economic, and cultural principles to attempt to understand each other's aspirations and problems, but it is a challenge that must not be declined. I think that all of us involved in the exchange met the challenge in our own fashion and felt that the outcome was well worth the effort. By discussing the problems each nation faced in higher education, we were all encouraged to take a fresh look at our own institutions, our own national arrangements--and most important, our assumptions--from a new point of view.

We hope that there will be further opportunities for thought-provoking experiences of this kind. They provide a unique perspective from which to observe events and trends in education and in our broader society.

INTRODUCTION

Robert A. Feldmesser

In 1976, a group of educators from the Soviet Union visited the United States to study various aspects of this country's system of higher education, and later in the same year a group of educators from the United States visited the Soviet Union to study its system of higher education. These visits were made under the terms of the cultural exchange agreement between the two countries, which included a provision for exchange of information and delegations in the area of higher education. At the request of the U. S. Department of State, Educational Testing Service (ETS) assumed responsibility for arranging the visit to the U. S.; its counterpart in the Soviet Union for purposes of this exchange was the Scientific-Research Institute for Problems of Higher Education (Nauchno-Issledovatel'skii Institut Vysshei Shkoly, or NIIVSh). As a research sociologist with experience on the faculties of several U. S. universities and with a background in the study of Soviet society and a working knowledge of the Russian language, I served as ETS project director for the exchange. This volume is a report on what transpired.

The visit to the U. S. began with a seminar of nearly three days (March 15-17) at the Henry Chauncey Conference Center of ETS. The Soviet participants in the seminar were:[1]

Valentin M. Kuznetsov, deputy director of NIIVSh and chairman of the Soviet delegation
Albert V. Filippov, research psychologist, NIIVSh
Nikolai M. Kogdov, head of the computer technology group, NIIVsh
Ivan A. Martynov, rector of the Moscow Textile Institute
Kasim M. Temirbayev, head of the social sciences department, Pushkin Institute of the Russian Language
Vladimir N. Vinogradov, rector of the Moscow Institute of the Petrochemical and Gas Industry
Igor V. Vorobev, head of the department of universities and higher economic training institutes, All-Union Ministry of Higher and Secondary Specialized Education

[1] Titles and affiliations of all individuals in this report are given as of the time of the exchange.

The U. S. participants, who had been invited by ETS to attend, were:

William W. Turnbull, president of ETS and chairman of the U. S. delegation
Stephen K. Bailey, vice president of the American Council on Education
K. Patricia Cross, senior research psychologist, ETS, and visiting university professor, University of Nebraska
Robert A. Feldmesser, research sociologist, ETS
Lyman A. Glenny, director of the Center for Research and Development in High Education
Sidney Marland, president of the College Entrance Examination Board
Virginia Smith, director of the Fund for the Improvement of Postsecondary Education
Stephen Spurr, professor of botany and public affairs, University of Texas

By agreement between ETS and NIIVSh, the seminar concentrated on two topics: selection and guidance of students in higher education, and the meaning of the undergraduate degree. A paper on each of these topics had been prepared by, or at the request of, the participants from each country; these papers were translated into the language of the other country and distributed to all the participants in advance of the seminar. Each paper was the starting point for one session of the seminar, although it was inevitable that the discussions ranged beyond the subject matter of the papers.

When the seminar was over, the Soviet group, accompanied by me and two translators provided by the Department of State, left for a tour of U. S. institutions of higher education. After a brief stop at Princeton University, they went to Boston for visits to Harvard University and Northeastern University; thence to San Francisco, for visits to the ETS office in Berkeley, the University of California at Berkeley, the Carnegie Council for Policy Studies in Higher Education, Stanford University, San Francisco State University, and the College of San Mateo; and to Atlanta, for visits to the Georgia Institute of Technology and Southern Technical Institute, the Atlanta University Center (specifically, Atlanta University and Morehouse College), Georgia State University, and the Georgia Board of Regents. At each of these places, a schedule of meetings had been set up with administrative officers, faculty members, and students, and there was an opportunity to see some of the physical facilities. The "official" part of the three-week stayed ended with a day-and-a-half meeting, at the Atlanta office of ETS, of the Soviet visitors and most of the U. S. participants in the opening seminar.

The visit to the Soviet Union was in some ways a mirror image of the visit to the U. S. It began with a seminar of two and a half days (October 4-6) at the offices of NIIVSh in Moscow. The U. S. participants were:

William W. Turnbull, president of ETS and chairman of the U. S. delegation[2]
Henry Chauncey, president emeritus of ETS
K. Patricia Cross, senior research psychologist, ETS
Robert A. Feldmesser, research sociologist, ETS
Lyman A. Glenny, director of the Center for Research and Development in Higher Education
Seymour M. Rosen, specialist in comparative education, Office of Education
Stephen H. Spurr, professor of botany and public affairs, University of Texas

The Soviet participants, who had been invited by NIIVSh to attend, were:

Vladimir N. Chetverikov, director of NIIVSh and chairman of the Soviet delegation
Anatolii P. Akat'yev, head of the division of international experience in the training of specialists, NIIVSh
Boris A. Burak, head of the division for forecasting development of higher education, NIIVSh
Valentin M. Gudkov, vice rector of the National Polytechnical Extramural Institute
Tovi V. Kudryavtsev, head of the division of theory and methodology of instruction, NIIVSh
Valentin M. Kuznetsov, deputy director of NIIVSh
Mikhail K. Poltev, director of the Methodological Center for Higher Education and Advanced Training
Aleksandr Ya. Savel'ev, assistant director for scientific affairs, NIIVSh
Lyudmilla M. Serova, group head, NIIVSh
Vladimir V. Zakharov, rector of the National Railway Engineering Extramural Institute

The two topics that had been chosen for concentration at this seminar were manpower planning for higher-education purposes, and nontraditional forms of higher education. Again, papers were preapred on each of these topics by participants from each country, although this time the translations were not ready in time to be distributed in advance. While in Moscow, the U. S. group visited the Moscow Textile Institute, Moscow State University, the Moscow Institute of Management, the National Polytechnical Extramural Institute, a Pioneer Palace, the Central Council of the People's Universities and of the Administrative Board of the Znaniye Society, and the People's University of the Moscow House of Technical Progress. Accompanied by Akat'yev and another

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[2]Because of other commitments, Turnbull was able to remain with the U. S. group for only the first week of its stay. Spurr served as chairman of the delegation for the remainder of its visit.

member of the NIIVSh staff, Natalia A. Guseinova, the group then left Moscow to visit higher educational and related institutions elsewhere: Tallinn (Tallinn Polytechnical Institute), Tartu (Tartu University), Kiev (Kiev State University, Ministry of Higher and Specialized Secondary Education of the Ukrainian SSR, Kiev Institute of the Food-Processing Industry, Kiev Institute of Civil Engineering, Kiev Institute of Civil Aviation), Tashkent (Ministry of Higher and Specialized Secondary Education of the Uzbek SSR, Tashkent State University, Tashkent Polytechnical Institute campus at Chirchik, State Planning Committee of the Uzbek SSR), and Samarkand (Samarkand Agricultural Institute). At the conclusion of the trip, the U. S. group returned to Moscow for another meeting with the Soviet group at the NIIVSh offices and a meeting with the deputy minister of higher and specialized secondary education of the USSR.

This report contains the papers written for the seminars in both the U. S. and the Soviet Union, and summaries of discussions that took place in the two countries. A few words of explanation are needed about each of these parts of the report.

The papers prepared by the U. S. participants, or at their request, have been edited by me, chiefly for the sake of brevity and of consistency of terms. The papers prepared by the Soviet participants have been translated by me into English de novo. With the advantages of (a) more time than was available to the original translators, (b) knowledge of what was in the other papers, and perhaps (c) greater familiarity with both Russian and English terminology in higher education, it seemed to me that I was able to provide translations that were clearer and that might allow the reader to perceive points of similarity and difference more readily.

The summaries of discussions are based mostly on tape recordings that were made of the meetings held at the ETS and NIIVSh offices and at the various higher educational and related institutions in the Soviet Union. (No recordings were made during the visits to U. S. higher educational institutions, and so no summaries of the discussions there are presented.) Upon my return to the U. S., I listened to all of the tapes and wrote a condensed version of the discussions. In the interest of conserving time and space, I usually paraphrased speakers rather than reproducing their discourse verbatim, and I sometimes re-arranged the sequence of remarks so that everything said on a particular subject during a particular meeting could appear in one place. On other occasions, where it seemed a more concise way of conveying what was communicated, I have put together everything the hosts at an institution said and followed it with the visitors' questions (underscored) and the hosts' answers to those questions. Throughout, however, I tried to remain faithful to the substance of what was said and to the character of the interactions among the participants. Toward this end, I adopted the following practices:

1. Particular speakers have not usually been identified. Often a remark made by one person was elaborated on or qualified by his or her colleagues, and what seemed important was the overall sense of the statements rather than the individual contributions. However, exceptions have been made in cases where knowing that a comment had been made by a particular person was important to understanding the discussion, or where a comment could not be easily summarized and so was given in full.

2. Paraphrases of the speakers' remarks have been given in the present tense (e.g., "For students from low-income families, the costs of college may also be a restraint on their choice"), while my own descriptions and explanations of what was happening have been given in the past tense (e.g., "An analogy was made between what was called 'occupational orientation' in the Soviet paper and the newly emerging concept of 'career education' in the U. S."). Verbatim quotations have been placed within quotation marks or, for longer passages, indented in the usual manner. Quotations of Soviet speakers have again been given in my translation. Square brackets have been used to indicate meanings that could be understood from hearing the spoken remarks or from having been present at the discussion but that were not actually said (as, for example, when a speaker pointed to another person).

3. Questions that were not directly answered have been included when it seemed to me that the lack of an answer was itself interesting or when the answer that was given contained information other than what the questioner was seeking. Sometimes remarks were made whose meaning was not clear, and these have been included, too, if they seemed suggestive or of potential importance.

Finally, a note on some Russian words: (1) The phrase zaochnoye obrazovaniye is customarily translated as "correspondence education." However, during the seminar at NIIVSh, we came to realize that "correspondence" connoted a form of education that was much more limited than what a Soviet speaker meant in using the term zaochnoye (see the discussion on pp. 140-141). It is true that, as Cross pointed out in her paper for the seminar (see p. 107), correspondence study in the U. S. now embraces a wider variety of methods than it once did, but recognition of this is probably not yet widespread. Hence, in this report the words zaochnoye and zaochnyi (two forms of the same adjective) have been translated as "extramural." (2) Soviet usage has a convenient acronym for "higher educational institution." It is vuz (from vyssheye uchebnoye zavedeniye), and it is treated exactly like an ordinary word in the Russian language. We have adopted the usage in this report, because it is so much simpler to write "vuz" than to write "higher educational institution." The Russian plural of the word is vuzy, but here it is given the English plural, vuzes, both in order to reduce its strangeness to the reader in the U. S. and to symbolize the conjunction of elements from different cultures that was the essence of this exchange.

Acknowledgments

A great many people helped to make the exchange possible and pleasant. ETS staff members in three regional offices worked with institutional representatives in setting up detailed schedules of visits: in Boston, George W. Elford; in Berkeley, Jonathan R. Warren; and in Atlanta, Scarvia B. Anderson and Gray Sidwell. Doubtless there were counterparts at NIIVSh, but we did not learn their names; however, it was clear that the director, Vladimir N. Chetverikov, and the deputy director, Valentin M. Kuznetsov, had much to do with the fact that our stay in the Soviet Union was informative and interesting, and we knew from direct observations that our escorts on our visits to Soviet vuzes, Anatolii P. Akat'yev and Natalia A. Guseinova, did a great deal to smooth paths, add to our understanding, and put us at ease. While in the U. S., we had the services of two competent and knowledgeable interpreters, Nicholas Berkoff and Steven Seymour. Our interpreters at NIIVSh were equally competent, but unfortunately we again did not learn their names. Most important, at every institution we visited, both in the U. S. and in the Soviet Union, we were met by dozens and scores of people who were eager to help make the exchange successful and toward that end gave generously of their time, their knowledge, and their thinking. The names of many of these people are given in the discussion summaries, but there were probably many others who played less valuable roles.

Irma Kienitz and Lois G. Harris not only typed the text of this report with care and skill and speed but also kept it intact during the many, many months that it took for me to get it into shape.

Obviously, in a report of this kind, I have taken quite a few liberties with the written and spoken words of other people. I have striven to be an objective reporter, but of course I must bear the responsibility for any distortions or misinterpretations that may have been introduced through my transformations of the original.

GUIDANCE, SELECTION, AND ACCESS TO HIGHER EDUCATION IN THE UNITED STATES

Jenne K. Britell*

Introduction: A Brief Overview

In the fall of 1975, 11.2 million students were enrolled in the 3,038 two- and four-year colleges and universities in the United States.[1] Although the overwhelming majority of first-time students came almost immediately after graduating from one of the 25,000 American high schools and were 19 years of age or younger, the number of older students is increasing; in the 1974 higher-education student body of 10.3 million, one million students were 35 years of age or older, and 50 percent of this group were women.

These students come from all parts of the United States and every socioeconomic level and pursue different interests and studies for several purposes. Nonetheless, according to surveys by the American Council on Education, more than two-thirds of the entering college population feel that the chief benefit of going to college is that it increases one's earning power.

The 3,038 institutions do not include the proprietary technical vocational institutions, operated for profit, which train individuals to practice a particular skill, such as television and radio repair. Of the 3,038, more than a third are two-year institutions, and 901 of these are public, subsidized by federal, state, and local contributions; 256 are private; and 1,881 are four-year institutions, of which 552 are public and 1,329 are private, the latter including 790 that claim some religious affiliation. More than 75 percent of all students, however, attend the 1,453 two- and four-year public institutions, in part because of their lower costs.

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*The invaluable assistance of the following staff members of Educational Testing Service is gratefully acknowledged: Leonard L. Baird, Marjorie L. Blinn, Irving L. Broudy, Frederick H. Dietrich, Rodney T. Hartnett, Thomas L. Hilton, Martin R. Katz, Ernest W. Kimmel, and John R. Valley.

[1]The source for all figures is the National Center for Educational Statistics, U.S. Office of Education, except where stated otherwise. All figures are the most recent obtainable, usually 1974-75.

The diversity of students and institutions reflects the philosophy and history of U.S. higher education. Americans have always prized education for its benefits both to the individual and the society. This has led to a system of universal elementary-school education, almost universal secondary-school education (over 90 percent of all 16-year-olds are enrolled in grades 9-12), and an expanding college-going population -- which in 1975 increased nine percent over the previous year (from 10.3 million in 1974 to 11.2 million in 1975). The opportunity to go to college has expanded and, over a period of time, restrictions based on financial ability, space, selective admissions, location, or program have been reduced. In the U.S., individuals, with some limitations, make the choice with regard to the use of this opportunity. This philosophy has generated a continuously growing system and provided diversity of purpose as well as historical origin.

The first U.S. institution of higher education, Harvard University in Cambridge, Massachusetts, was founded in 1636. One of its initial objectives was the training of ministers for the Congregational Church. Although this objective disappeared before the end of the eighteenth century, higher education from 1636 through the 1850s expanded primarily through private initiative and financial support. Religious groups continued to be influential in the founding of colleges and universities. Although state legislatures in many instances chartered these institutions, their efforts to intervene in the governance of the institutions failed, and each was governed by the purposes of its founders and supporters.

After 1860, a major new force, the national government, began providing substantial support for U.S. higher education. In 1862, the U.S. Congress passed the Morrill Land Grant Act. Through this legislation, the national government gave to each state public land (the "land grant" of the Act). States were to use the proceeds from the sale of the public lands to support the founding or expansion of public state colleges and universities.

These state universities were responsive to their constituency, the state's residents, and their tuition costs, admissions requirements, location, and programs made them more accessible and more directly "useful" than many of the earlier private universities. In some instances, these institutions aided high schools in curriculum reform and provided in-service education for teachers. Where the state's economy demanded, such programs as agricultural research, veterinary medicine, and metallurgical engineering were created. At the same time, following the model of the older private institutions, many of these public universities developed programs leading to the Ph.D., as well as professional schools of law and medicine.

After World War II, major expansion occurred in the two-year community-college system, which was, like the state university

system, primarily publicly supported. Thus the student of higher education can now choose among institutions diverse in origin, student body, purpose, program, size, and cost.

Admissions standards, curriculum, and the number of courses or points required for concentration in a subject or for the degree differ from institution to institution. In the U.S., students at the undergraduate level are admitted to an institution rather than to a department and choose the department and area of concentration after they enter.

The quality of the student body is determined by the university's standards, not the nation's. The student who ranks at the bottom of the graduating class of a highly selective institution may perform at a level that would place him or her at the top of the class in another institution. The most selective institutions, with many more qualified applicants than places (sometimes as many as ten for each place), evaluate several factors in deciding which students to admit: high-school grade-point average, scores on standardized tests for admissions -- such as the Scholastic Aptitude Test (SAT)[2] and the American College Testing Program (ACT) -- teacher recommendations, interviews, and other activities.

Other institutions follow an open admission policy -- guaranteeing admission to some program for all students who have graduated from high school. This is true of virtually all community colleges. Still others, state universities in particular, may have one set of entrance requirements for state residents and another (more demanding) for out-of-state applicants.

The programs provided by these different institutions of diverse founding and purpose vary, too. They range from strongly technical training in a particular skill or skills to a broad liberal-arts program leading to the baccalaureate degree, which itself is often the prelude to advanced study in the humanities, social or natural sciences, or law or medicine. There are also other areas of study, such as education or nursing, which offer the opportunity to enter practice at both undergraduate and graduate levels. Institutions also vary in size, from those with less than a hundred students to "multiversities" with student bodies in the tens of thousands.

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[2]The SAT is developed and administered by Educational Testing Service (ETS) for the College Entrance Examination Board (College Board). Founded in 1900, the College Board is a membership association which today includes 2,200 public and private secondary schools, school systems, two- and four-year colleges and universities, and educational associations.

Although individual institutions have primary control, there are some characteristics which are fairly common to U.S. higher education: membership accrediting agencies (whose membership consists of the higher educational institutions in a region) which pass on the competency of institutions or departments; professional associations, which have certain requirements and whose members are likely to adhere to some common standards; uniform requirements for graduate study, such as college completion and a common entrance examination for all applicants; and state licensing or credentialing examinations which impose a standard for acceptance into the practice of a profession.

The High-School Years

American high schools are even more diverse than the colleges, since there are more of them (25,000) and the principle of control by the local municipality is very strong, with only a few provisions mandated by each state. These requirements typically specify the number of credits of English, U.S. history, and physical education. Local control extends to financial support; school districts (local geographic educational units) finance approximately 50 percent of school expenditures.

For the most part, American high schools provide a four-year program, covering grades 9-12 and enrolling students aged 14-18. In some communities, the ninth grade is part of a "junior high school," and only grades 10-12 are covered in the senior high school.

The student's first major academic planning occurs in the ninth grade, when he or she is 14 or 15 years old. In the past, ninth-grade students who planned to go to college were advised to pursue a "college-preparatory" program, which would include advanced mathematics, foreign languages, and laboratory sciences such as biology, physics, or chemistry. Students who planned to stop at the high-school diploma or to take advanced training in technical, commercial, or vocational schools pursued another course of study. Change from one program to another was difficult. Today, distinction among these programs is disappearing and there is greater flexibility.

Much of the change has come about because of the growing belief that ninth grade is too early to make decisions. Another substantial reason for the increased flexibility is the growth of open-admissions policies in higher education, especially in the two-year institutions. Such policies give students the opportunity to go to college even if they have not elected a college-preparatory program, and about 20 percent of the high-school students who go to college immediately after graduation make that decision at the end of their senior year.

High-school students are assisted in their initial and later planning, and in the admissions process itself, by counselors whose main duties are to guide students to appropriate courses in high school and later to colleges and universities. Almost every high school in the U.S. has at least one counselor, and there are approximately 50,000 counselors in the 25,000 U.S. high schools. In addition, many teachers also provide counseling assistance. On the other hand, counselors may have teaching or administrative responsibilities. About one-third of the counselors' time is spent helping students with post-secondary educational planning. Career and vocational planning, academic planning of high-school programs, and assistance with personal and family problems occupy the remainder of their time.[3]

At the eleventh-grade level, counselors assist students in reviewing their abilities, interests, and finances, as they begin to consider where to apply to college. The counselor also helps the student deal with details of the admissions process, such as completion of forms and meeting deadlines. Very often, the counselor maintains a library of information about colleges and college attendance. To the extent possible, counselors attempt to discuss college plans with each student once or twice during the junior and senior years. Frequently, parents are included in this discussion of the admissions process, admissions tests, sources of financial aid, and specific colleges. However, since the average counselor has about 350 pupils assigned to him or her, it is not always possible for the student to gain as much assistance from the counselor as would be desired.

Several additional aids exist to help students in choosing the schools they wish to attend. Among these are the precollege guidance tests, most particularly the Preliminary Scholastic Aptitude Test (PSAT), the results of which are supposed to be interpreted to students by their counselor. Approximately 1.2 million high-school juniors take the PSAT each year in order to gain an estimate of their academic potential for college work. Beyond this, participation in the testing program enables the student to be considered for a variety of scholarship programs awarded to students of high academic potential.

The college directories, a general term for a variety of books published by associations such as the College Entrance Examination Board and by commercial publishers, provide information on many colleges. For example, the College Board's publication, the College Handbook, provides information on more than 2,200 two- and four-year colleges and universities. The

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[3] National Longitudinal Study of the High School Class of 1972. Washington: U.S. Office of Education, June 1973.

information, supplied by the institutions, covers admissions, curriculum, student life, annual expenses, and financial aid, and the Handbook gives the names and addresses of persons to contact for further information.

In addition to these general directories, each college produces and distributes its own catalogues, which give course descriptions and other details. Would-be applicants also have personal contact with the college through high-school visits from the college's admissions staff, visits to the college campus, and conversations with alumni who live in the prospective student's community.

Applying to College

In order to gain entry to higher education in the U.S., a student in the last year or two of high school must decide to apply to one or more specific institutions. There is no automatic selection, although there are a number of ways in which talented students may be encouraged. By far the most important factors in selection and access are the decision first to apply and then the choice among colleges and universities. Typically, institutions accept more than 75 percent of their applicants, and fewer than three percent of the students are rejected at all of the colleges to which they apply. Students tend to apply, however, to institutions where they are likely to gain acceptance. With the exception of the selective institutions of higher education -- perhaps five percent of the total -- it is usually the student who chooses the institution.

Although academic aptitude, as indicated primarily by a student's high-school performance, is the single largest factor in his or her decision to go on to college, socioeconomic status (SES) is a second major consideration. Students of higher SES are more likely to apply to college and far more likely to apply to private, selective institutions; students of lower SES are less inclined to apply, and when they do go to college are more likely to attend a community college. There are several reasons for this: private institutions are more expensive; children of higher SES are more likely to have parents who both emphasize the importance of college and have attended college themselves; and because school performance and SES tend to be related, students of higher SES are more likely to achieve the grade averages and test scores required by four-year and especially by selective institutions.

During the past several years, however, selective institutions have made substantial efforts to seek out, admit, and provide financial and educational support for students from lower socioeconomic backgrounds and minority and ethnic groups who have

not normally applied to these institutions. This effort has made present higher education in the U.S. more egalitarian than previously in the U.S. or presently in western European systems.[4]

Students who have decided to apply request application material from each of the colleges they want to consider, usually at the beginning of their last year of high school. In some instances, particularly for nearby institutions, the high-school counselor may maintain quantities of these materials. College applications and the amount and kinds of information required of the applicant are as varied as the colleges themselves. Most require a completed application form with information about date and place of birth, parents' names and occupations, previous educational attainments, and educational goals.

Application forms vary from one to ten pages; some ask for short essays on an aspect of the student's life or philosophy, to aid in judging writing skills and to learn more about individual students. Many ask students to supply written recommendations from teachers and others who can describe the student's character and abilities. The college supplies a recommendation form, and the writer returns it directly to the institution. Some institutions require a personal interview as well.

A complete transcript of the applicant's high-school grades to that point is often requested. (After admission but before enrollment, the high school may be asked to supply additional information on grades and to certify that the student has graduated.) In order to compare grades from high schools of varying academic rigor, colleges often ask that the high school supply the student's academic rank in class as well as grade-point average.

Selective colleges usually require the completed application forms to be submitted by February for consideration for admission in the following fall. Other institutions vary in their requirements, some permitting application until a week before registration for the semester one wishes to attend. Application fees range from $10-$25, but are often waived for financially needy students.

Depending upon the requirements of the colleges, applicants may take one or both of the national standardized college admissions aptitude tests: the Scholastic Aptitude Test (SAT) of the College Board or the tests of the American College Testing Program. The majority of students take these tests early in the twelfth grade and designate the institutions that are to receive the results.

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[4] Joseph Ben-David, American Higher Education: Directions Old and New. New York: McGraw-Hill, 1972.

In 1974-75, more than 500,000 students took the SAT in their junior year (eleventh grade), because they were considering selective colleges; many of these students will repeat the examination (on a different form) in their senior year. Students pay a fee of less than $10 to take the tests and, like the college application fee, this is waived in the case of a financially needy student.

The criteria for admission into college are diverse and dependent on the institution and its selectivity. In some large public systems, such as the state universities, the criteria for admission are set by state law, which may require a minimum high-school grade-point average and/or some minimum score on an entrance examination. Most community colleges, as mentioned above, accept all applicants with a high-school diploma; some accept all local applicants who have reached the age of 18, whether or not they have a high-school diploma.

Most institutions of higher education have at least one full-time admissions officer who is aided by a staff, the number depending on the institution's size, selectivity, and resources. The admissions staff provides information on admissions policies, interviews applicants, considers applications and processes those admitted, and provides support for admissions committees where they exist.

Selective institutions often have admissions committees, which include faculty (who serve on a part-time basis) as well as full-time staff from the admissions office. The admissions committee reviews applications and examines several facts, of which the most important is academic promise, estimated on the basis of the student's previous grades, specific courses taken, and test scores which may include standard achievement as well as aptitude measures. The committee may also consider applicants' nonacademic achievement in high-school activities such as music, athletics, debate, and student government, as well as independent or unique academic and nonacademic accomplishments.

Testing for College Admissions

Approximately one million of the 3.13 million high-school seniors who graduated in 1975 took the SAT. Approximately 230,000 also took one or more College Board Achievement tests.

The practice of a uniform examination which both provides a common standard across a diverse secondary education system and enables admissions officers to learn of able students from schools with which they are not familiar developed in the United States at the beginning of the twentieth century. Up until then, American institutions of higher education had even more varied admissions policies and practices than they do today. Some required only a high-school diploma. State universities gave preference to

state residents. A third group of institutions, including many of the older eastern colleges founded in the seventeenth and eighteenth centuries, required applicants to take a series of admissions tests which each college constructed. These colleges also required different content preparation at the secondary level, and there was no common syllabus on which students were examined.

In 1899, a number of institutions requiring different admissions tests decided it would be more efficient, as well as equitable for students, if a single comprehensive examination, which tested knowledge based on a common curriculum, were given in each subject. This examination, to be accepted by all of the member institutions, would be developed and graded by a single group of examiners. In 1900, these colleges formed the College Entrance Examination Board. Two of the Board's early objectives were agreement on a common syllabus and the subsequent development, administration, and grading of a single examination in each subject. The College Board's examinations, which measured students' levels of knowledge acquired through formal study of the subject and were developed by college and high-school teachers in the discipline, were termed achievement examinations.

At about the same time, during the first two decades of the twentieth century, American psychologists were conducting research which seemed to indicate that certain learned skills, or "aptitudes," were related to performance in various academic areas. In 1926, the College Board, by then an expanded number of institutions, developed and administered the Scholastic Aptitude Test (SAT). In contrast to the achievement examinations, which measured knowledge gained through study of a particular subject, the SAT was designed to measure verbal and quantitative aptitudes -- skills learned and developed over an extended period of time through both school and other experiences and less closely tied to a particular curriculum.

As the twentieth century progressed, American colleges and later graduate schools, faced with an expanding pool of applicants representing the heterogeneous U.S. population, relied increasingly on this kind of test for two major reasons: Continuing research showed that scores on the tests were related to the ability to do first-year college work, and the tests provided a single measure for evaluating applicants from diverse educational backgrounds, with many of which an admissions officer at a particular college or university might not be familiar. These admissions tests were instrumental in changing the population in the highly selective American colleges from one homogeneous in socioeconomic background and heterogeneous in ability to one homogeneous in ability but more heterogeneous in socioeconomic background.

In the 1940s, the College Board moved to objective forms of the achievement tests which, like the SAT, could be scored by clerks and subsequently by machine. In 1948, the College Board, the American Council on Education, and the Carnegie Foundation for

the Advancement of Teaching, all of which sponsored different testing programs, jointly founded the Educational Testing Service (ETS) to assume their testing activities and to carry on research requisite to the further development of measurement programs.

Today, despite the presence of more varied educational programs, objective verbal and quantitative aptitude tests and achievement tests remain important in the college (and graduate-school) admissions process in the United States. Contemporary verbal aptitude tests usually measure ability to read standard American English with understanding and to use verbal relationships -- for example, to choose the word most nearly opposite in meaning to the specified word. Quantitative or mathematical aptitude tests measure ability to handle various quantitative relationships, to understand graphs, and to read and understand materials dealing with quantitative relationships. These abilities, like skills in a particular discipline, are learned and are developed through the process of education.

When a test is to be used, the abilities which it measures must be related to the task that is involved; otherwise, the test is inappropriate. The relationship of the test scores to a high-school record and to university success indicates their validity. The degree of validity in a particular situation can be determined only by research. One kind of validity that has been crucial to the widespread acceptance and use of standardized objective testing in college admissions is predictive validity, the usefulness of the test in the prediction of academic achievement at a future time -- in this instance, the first year of college. This relationship is expressed by a correlation coefficient between test scores and first-year college grades; the higher the correlation, the more predictive the test.

Substantial empirical research has been done in the field of testing for college admissions. In general, high-school grades are the single best predictor of first-year college performance. When high-school grades are combined with test scores, the predictive validity is greater than that of grades or test scores considered by themselves. Test scores, like all measures, are not perfectly precise and every test score, although reported as a specific number, is best considered as representing a range of figures, from the highest that the student might have attained to the lowest. On the SAT score scale, which goes from 200 to 800, about two-thirds of the students will score within 30 points of their earlier results if they take the test a second time.

Perhaps the most typical pattern in American universities which practice selective admissions and use admissions tests as part of the process is as follows: Students with high grades and high test scores are accepted with relatively little concern for other factors, such as recommendations, school and community activities, and evidence of motivation and creative ability.

Students with low grades and low test scores are likely to be rejected, unless some aspect of their total record suggests the need for further consideration. The middle group -- students with high grades and low scores, or high scores and low grades, or average grades and average scores -- receives the greatest amount of time and consideration by admissions officers and committees. The relative importance of grades, scores, and other information in the admissions process varies, depending on a particular institution's pool of applicants and admissions philosophy.

Financial Aid

U.S. institutions of higher education are supported or financed by funds from both the public and private sectors. Traditionally, the public institution is funded primarily from local and state revenue. Private institutions rely for financial support on the tuition and fees from their attending students and on income from investments, endowments, and gifts. Both public and private institutions are eligible for funds from the national government.

Basic costs to the student for attendance at any institution in the U.S. are for tuition and fees, which range from less than $100 a year at some publicly supported colleges to $5,000 or more at some private four-year institutions. In addition, costs of room and board, books and supplies, and general living expenses must be considered. These additional costs are significant. The most recent average annual costs of attending various types of institutions are listed below:[5]

Type of Institution	Tuition & Fees	Books & supplies	Room & board	Total
Two-year public	$ 301	$ 161	$ 1213	$1675
Four-year public	598	173	1272	2043
Two-year private	1652	172	1239	3063
Four-year private	2240	179	1302	3721

As indicated above, tuition at a publicly supported institution is lower than at a private institution, which accounts in part for the relationship between SES and type of institution attended.

[5]Betty Suchar, Guide to Financial Aid for Students and Parents. New York: Simon and Schuster, 1975.

Most financial aid in U.S. higher education is awarded on the basis of financial need. Many families find it difficult to finance higher education for their children. Some 12 million students are estimated to be potential applicants for financial assistance, from current resources of approximately $6.1 billion. For those families unable to meet the total expenses of a college education, several sources are available to finance postsecondary education: grants and loans from federal and state governments, institutional funds, private scholarship programs of various organizations, private lending agencies such as banks, and other, more specialized programs (Social Security Administration, Veterans Administration, etc.).

To establish financial need, the student's parents complete one or more forms providing extensive financial information on income, assets, debts, standard categories of expenditures, family size, other children in college, and unusual family circumstances. For financial assistance under different programs, a number of different forms are required. In 1974, the National Task Force on Student Aid Problems was established to examine the problem of multiple forms, and it recommended the development of a single document to meet various needs and to provide a uniformly acceptable method of collecting and analyzing necessary data.

At each institution, a financial aid administrator is responsible for the coordination of all aspects of student financial assistance. Students who seek financial help consult this officer for specific information about the various programs for which they may be eligible.

Within their means, parents and students are expected to contribute a reasonable amount toward educational costs. Calculations leading to the payment expected of families of different characteristics are based on current cost-of-living data and economic principles. Subtracting expected family contribution from the known cost of attending a particular institution produces an estimate of the student's need for financial assistance. The resulting analysis forms the basis for decisions on "packaging" of financial aid. Determination of the amount to be awarded and of the "package" disbursed to each aid applicant is a task of the financial aid administrator. "Packaging" of aid is the total combination of different resources, including a contribution from the student or his or her family, to meet the total expenses at a specific institution. Packaging may take several forms. For example, a student may be awarded a grant which is nonrepayable, a loan which must be repaid, or a combination of grant, loan, and job.

The national government provides several programs of assistance to students who qualify; states provide other types of assistance which require a specified residency period as well as academic superiority. Other sources of significant financial assistance

include scholarship programs sponsored by private organizations or unions which are often designed for children of employees or members. Demonstration of financial need is typically a requirement for eligibility, but academic excellence is an important consideration. Full costs of a four-year postsecondary education are assumed by the federal government for students at the academies of the armed forces and for students in other universities who participate in officer-training programs. In both these instances, students are obligated to fulfill certain military service requirements following graduation.

Aid from all programs of financial assistance provides slightly less than 25 percent of the amount actually billed to students each year. Although this is a substantial increase from the 10 percent which such aid covered 10 years ago, most students must rely on their own earnings, their parents, and loans to pay for their college education.

Some Trends in Enrollments

The 1975 increase in enrollment in higher education of nine percent over 1974 represents the highest increase in a one-year period since 1965, although each year since 1965 has been characterized by rising enrollment. However, not all of those enrolled complete their education within the usual period. Although the attrition rate in higher education is difficult to estimate and varies widely among institutions, the best estimates place attrition at 40 percent during the normal four years.

The greatest growth in higher education enrollments during the past two decades has been in the community colleges. In these institutions students can complete a course which will permit either entry into a career or completion of the first two years of a traditional four-year bachelor's program and transfer to another institution for the remaining two years. In the fall of 1975, 43 percent of the slightly more than two million students who entered higher education in the United States entered two-year colleges. This is double the proportion of 15 years ago. Many of these students attend part-time. Part-time enrollment in U.S. institutions of higher education increased 11.2 percent in 1975 over 1974, compared with a rise of 7.5 percent for full-time students.

Most students who enroll at local community colleges apply only to that institution and perhaps to one other. Their choice of a community college is influenced by four major factors: proximity (two out of five people live within commuting distance of a community college); low cost (as was shown in the table above); the availability of specific technical and vocational programs

that provide job-entry skills in two years; and, often, an admission policy that requires only a high-school diploma.

Financial assistance, more institutions, diverse programs, and continued experimentation with new methods enable more Americans to participate in higher education than in the past. A varied, accessible system has evolved, permitting freedom of choice for both the recent high-school graduates and older men and women who enroll in higher education in the United States.

METHODS OF DIRECT (SHORT-TERM) AND EXTENDED (LONG-TERM) SELECTION OF STUDENTS FOR ENROLLMENT IN INSTITUTIONS OF HIGHER EDUCATION

V. M. Kuznetsov and A. V. Filippov

An analysis and comparison of the methods referred to in the title needs to begin with a definition of terms:

Selection will be used to designate all procedures aimed at evaluating, in the course of specially organized activities, the various attributes of a person in order to determine the degree of his fitness for a specific activity.

Method refers exclusively to a way of acting which depends on the time characteristics of a selection process.

Extended and direct[1] refer to the duration of the selection process, its time characteristics. It is evident that, in the present context, extended means a relatively lengthy procedure, as opposed to direct, which means a procedure occupying a shorter period of time. However, the dissimilarities in the methods of selection along the dimension of duration, as will be shown in succeeding paragraphs, are not at all limited to differences in terms of time. The different time characteristics of the methods permit a difference in content, which leads not only to a quantitative dissimilarity between them, but to a qualitative dissimilarity as well. The duration of the process of selection is merely a kind of vessel that, depending on its capacity, can be filled with a variety of ingredients, which in turn brings to the methods themselves a qualitative difference.

The question may well be raised as to whether methods can be classified on the basis of factors (in our case, the time factor) which only indirectly reflect the substance of these methods. Dissimilarities between the extended and direct methods of selection arise from the number of techniques they call for, and the effort it takes to employ such techniques and to process the data that result from their application; from the combination of psychological and background factors to be considered during selection; and from differences in the purpose of repeated evaluations of the traits under study -- whether this is to register the level achieved, or to attempt to discover a dynamic in a person's attributes for the purpose of influencing their development. Dissimilarities are also seen in the subject's activity, as this is prescribed by the

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[1] The Russian words are, respectively, prolongirovannyi and operativnyi--Ed.

the demands of the method. With the extended method, the activity has a more extensive character and more nearly resembles a natural activity. The subject has greater freedom in his choice of what the activity is to consist of and of the means of performing the tasks involved.

But the basic difference between the methods lies in the relationship to the subject. With the direct method, this relationship amounts to a review of the subject's knowledge and capabilities, whereas in the case of the extended method it is assumed that the relationship is educational, developmental, and formative.

All the above seems to give us grounds for calling the method of extended selection a complex method, and for suggesting that its complexity is its main feature. But the great variety of forms which the method of direct selection assumes in practice does not permit us to associate the extended method with the idea of complexity, while dissociating this feature from the method of direct selection. Complexity, understood as diversity or multiformity, cannot serve as a criterion for drawing a distinction between the two methods.

When using the extended method, we are faced with a complexity of measured attributes. But as they are found in diverse combinations and as techniques used for measuring them are also far from being uniform, it is clear that this interpretation of complexity can be applied to the extended method only with great caution. Complexity should be based on a clear-cut system of interrelated components, not on an indiscriminate collection of heterogeneous elements. In our case, the diversity of techniques serves to increase the reliability of selection but does not presently form a system which could be characterized as a "complex." However, this circumstance does not mean that the method of extended selection will not become a complex in the course of its development. It is precisely because the method is still new and therefore amorphous that we cannot call it that, but the latent qualities inherent in this method will eventually enable us to do so.

The above distinctions in the methods are very tentative. The present paper is devoted entirely to an analysis of the methods of direct and extended selection and, consequently, to their characteristics and the points of difference and similarity. We hope the resulting data will speak in favor of a wider application of the method of extended selection of students for higher educational institutions.

Before presenting the analysis itself, it will be appropriate to dwell on the reasons and aims of selection for higher educational institutions. It is generally known that the Soviet educational system is democratic in essence. All forms of education in the Soviet Union are free at all levels and accessible to all. It

is the concern of the state and an indispensable condition for the building of a communist society that the quality of education should steadily improve. The ninth Five-Year-Plan [1971-75-Ed.] saw the completion of the transition to universal secondary education. Enrollment in higher educational establishments is growing with every passing year. Our country offers various forms of assistance in education as well as other social benefits in order to make higher education factually accessible for all segments of the population, particularly for industrial and agricultural workers. Thus, the acquisition of a higher education has become a real and inalienable right of every Soviet citizen.

However, admission into higher educational institutions in our country takes place through a competitive process. One important reason for this is that the country's economy, science, and culture need a certain number and composition of specialists with a higher education. These needs are expressed in the rational occupational structure of the labor force. Obviously, an alteration of this structure in favor of one or more professional categories would not necessarily result in a qualitative leap in development of the productive forces.

Higher education means, above all, a definite amount of professional training, which undoubtedly also includes the general cultural development of the individual. For cultural development, there are also other facilities available in our country -- for example, people's universities, universities of culture, various kinds of courses, study groups, and, of course, self-education.

Thus, the acquisition of a higher education presumes a competitive selection, expressed concretely in the fact that the worthiest are chosen from among the applicants to fill the defined number of places in the entering freshman class. Should this form of enrollment be discarded, the problem of selection would still have to be dealt with upon completion of the higher educational institution.

But to say the "worthiest" is not enough, since this notion has many meanings and may refer to man's most diverse qualities. In connection with the need to define the dimensions of "worthiness," the question arises of what the aims of selection should be.

At the present stage of our knowledge of man, and of the requirements made of university graduates, the basic aims of competitive selection are to enroll those who possess (a) the knowledge necessary for study in the chosen field, (b) the abilities for learning the chosen vocation, and (c) stability of positive educational and vocational motivation. These aims are independent of the method used to achieve them, whether direct or extended. In our view, however, the chances of each of these methods to realize the aims of enrollment appear not to be the same. This does not mean that one method is <u>a priori</u> effective

while the other is not. The effectiveness of the selection method is probably connected with the level of development of the sciences of man and with certain objective conditions in the development of higher education, the economy, and the dynamics of society.

In our opinion, the stated objectives can be achieved only partially by means of the direct method. In the modern institution of higher education, direct selection is based on entrance examinations or on other forms of brief testing of several qualities of the applicants. Described in general terms, all of the forms of direct selection must have the features of brevity and uniformity of the test, and a high degree of standardization. However, each of the forms of direct selection is connected with a primary orientation toward one or another of the aims of selection.

Specialists who use various tests aim mainly at measuring the aptitudes of the individual, among which so-called "intellectual talent" is of no small importance. Soviet psychologists generally hold the view that tests which claim to measure "intellectual talent" in fact do nothing of the sort, but rather are measuring the presence in the individual of various sorts of information, skills, and habits, which must not be confused with aptitudes. Aptitudes are individual psychological properties of the personality which are prerequisite to successful fulfillment of a specific activity and which ensure mastery thereof at a specific rate. From this definition of aptitudes, it follows that:

1. Aptitudes are psychological properties of the personality, which influence the acquisition of knowledge, habits, and skills but which are not the knowledge, skills, or habits themselves.

2. The influence of aptitudes on mastery of knowledge, skills, and habits is expressed in the rate of mastery.

3. While rejecting the identity of aptitudes with such components of activity as knowledge, skills, and habits, it should be noted that they are all revealed only in the course of specific activity.

It is of particular importance for selection, therefore, that aptitudes are not the same as knowledge, skills, and habits, but that the exertions of the individual in acquiring them (the rate of progress) characterize him as a person who does or does not have an aptitude for a specific type of activity. The dynamics of acquiring knowledge and the features of its application cannot be measured by means of a test, which is a form of the method of direct selection.

In our country, a way of testing which embodied elements of instruction in its very procedure was suggested by L.S. Vygotsky in the 1930's. He called this way of revealing the level of aptitudes through testing a method for determining the zone of

imminent development. But such an application of a test affects its operative character, since the measurement procedure involves the process of instruction and observation, as a result of which data are obtained for comparing achievements. Thus, changing the method brings about a change in its essence. Vygotsky's suggestion is, to a certain extent, a transition from the direct to the extended method of selection.

There are other considerations which show the weak points of testing as a method of selection. Among them is the insufficient basis of the methodology of test construction. Like any other form of direct selection, a test is a means of diagnosis. A test is therefore constructed with the aim precisely of diagnosing the attributes of a personality. The methodology of diagnosis is based either on speculative psychological hypotheses -- for example, one or another model of personality -- or on statistical data reflecting the norms in a defined population.

The specialists assembled here are well aware of the great diversity of theories of personality offered by contemporary psychologists of different schools and tendencies. Each of them claims truth for itself, which implies also a claim as a basis of principles for the study of personality, and in particular principles of selection. Such great variety is in itself grounds for caution regarding the theories of personality themselves as well as the instrumentation based upon them.

The proponents of statistical methodology in testing, while criticizing speculative psychological theories, assume that the law of large numbers offers a guarantee against errors in diagnosis. In so doing they would have us believe that to form a correct judgment about a phenomenon it is not necessary to understand its nature. They tell us, for instance, that man still does not know what electricity is, and yet this has not prevented him from learning how to measure various characteristics of this natural phenomenon.

It should be noted, however, that such reasoning can be adopted in reference only to the phenomena of nature, not to personality. The law of large numbers cannot be applied to individuality. There is no denying that the personality is unique, that each individual acts differently from others. It is precisely the uniqueness of the individual, with his natural right to happiness and to a humane relationship with him on the part of society, that should be regarded as the indisputable condition for a selection process. Until we acquire adequate knowledge of a specific personality, so long as we have only statistical indicators of it, even if they are correlated with data about a population, we cannot be sure that the statistical methodology is justified for the solution of individual problems.

In selection oriented exclusively toward aptitudes, the question of their structure inevitably arises. As mentioned above, aptitudes are displayed in activity. A student is supposed to be occupied in educational activity for a certain number of years and in labor activity for the rest of the years following. It is obvious that, for selection purposes, aptitudes for both educational activity and labor activity should be taken into consideration. The former may be qualified as reproductive-productive aptitudes, the latter as productive-reproductive. If we remember that aptitudes are expressed by the rate of mastery of activity and by the special features of its execution, then it is evident that the two types of activity (educational and labor) will require different methods and, consequently, different scales for the measurement of aptitudes. In this connection, the question arises of which aptitudes should be preferred in selection for a higher educational institution. To the best of our knowledge, the existing tests and the methods of their application do not adequately meet the requirements of either of the two types of activity.

Among the tests connected with selection in one way or another there are some which are designed for research into individual motivation. However, tests of this kind can describe the state of an individual's motivational sphere only during the research or in the immediately preceding period. In our opinion, the predictive value of the direct methods of motivational research is rather insignificant. A direct method for the study of motivation is usually applied without involvement in activity; it is most often based on verbal expressions, while in our view it is precisely activity that provides the predictive significance of any method used to study individual motivation.

The entrance examination is a second form of the direct selection method. This form is aimed at revealing the level of knowledge the applicant has reached: those who demonstrate the best knowledge in the subjects they have studied in school are admitted to higher educational institutions. Knowledge as an aim of selection is a very valuable criterion. An individual is supposed to have basic knowledge at his disposal; otherwise it would be difficult to provide for uninterrupted study. This is of special importance for the present-day mass vocational training school run on standard curricula fixed in duration. In such a school, even an individual high in aptitudes but lacking sufficient knowledge may eventually lag behind the level of achievement normally reached in the program. If the disparity in knowledge exceeds a certain critical magnitude, even his aptitudes will not be able to give a student the necessary speed to meet the established requirements.

However, orientation toward knowledge successfully mastered at school, in selection for higher education, does not permit adequate prediction of the following:

1. How successful a student will be in mastering the fundamentals of college-level subjects.

2. How capable he will be of functioning in his vocational field.

3. Whether a positive labor motivation will be created in the process of study in the chosen specialization.

Therefore, orientation exclusively toward knowledge can only reveal the level of training necessary for further education.

But an entrance examination is usually designed to reveal not so much the presence of knowledge as the level of achievements and the variety, depth, and dynamics of the knowledge. If more than the typical level of applicants' knowledge is required, and an attempt is made to discover those individuals whose knowledge is above this level, then the examination procedure appears to be aimed at revealing not only knowledge but also certain psychological qualities of the individual. Many people regard these qualities as the essence of aptitude. In that case, consciously or, more often, unconsciously, knowledge and aptitude are being considered identical. It is assumed that the deeper, wider, and more stable an individual's knowledge, the more capable he will be in the activity of the field of technology, science, or art which he has chosen.

This assumption is not entirely groundless. Undoubtedly, the wider, deeper, more dynamic, and more stable is the knowledge acquired by youths in secondary school, in comparison with the knowledge of their age-mates, the higher will be the rate of progress, which is precisely what we consider to be the projection of aptitudes. But this is true only on condition that the substance of knowledge is not affected by other factors -- in particular, the factors of social status, industriousness, the level of instruction at school, the level of the family's cognitive interests, etc. In other words, the breadth, depth, stability, and dynamism of knowledge can serve as a yardstick of aptitudes only when a whole series of factors, both social and individual, are comparable.

To this we should add that aptitudes are not always revealed early or sufficiently often. The discovery of aptitudes does not always come during the period of attendance at secondary school, but may come at a later period, often in the course of vocational activity.

Knowledge-oriented selection does not help to reveal the motives behind the choice of a specialization, either. Even in cases of exceptional knowledge, it is impossible to establish to a sufficient degree the strength of the motives underlying the choice of a vocation, nor the extent to which these motives are predominant in the motivational structure of the individual's behavior.

The following conclusions may be drawn from what has been said so far:

1. The method of direct selection, which is essentially diagnostic, is only loosely connected with the methods and content of education and with future vocational activity.

2. The administration and use of tests and examinations achieves only one of the several aims of selection -- the aim of selection according to knowledge. The use of direct selection procedures rules out an orientation toward aptitude, or makes it difficult.

3. The method of direct selection fails to establish the degree of motivation behind the applicants' choice of vocation.

These shortcomings of the direct method undoubtedly flow from the diagnostic concept which lies at its base. This does not mean that diagnosis of certain individual traits is impossible in principle. Rather, it suggests only that the direct method as it exists today is not a very promising means of diagnosis.

A more productive concept lies in the use of the extended method, based on a developmental, educational, and instructional approach to selection. The extended method transforms selection into a unique didactic system, as against the evaluative system of the direct method. It is a method for the prolonged study of a potential student body. Its most important task is not so much to screen, by means of standardized techniques, those who wish to enroll in a higher educational institution, as to purposefully develop the personality and to form vocationally significant qualities, including, among other things, stable motivation for study and work in a chosen field. Such an approach conceives of selection not as an isolated act, but as one closely connected with vocational orientation, the most important task of which is the vocational self-determination of the individual. Insofar as the extended selection process is conducted on the basis of the obligatory involvement of the individual in an activity simulating vocational activity in a defined way, the individual receives an opportunity not only to develop his aptitudes and to strengthen his desire to pursue a chosen occupation, but to learn about himself and his potentialities for achieving the goals set by himself.

The method of extended selection offers a greater guarantee that those admitted to a higher educational institution will not be persons alien to a given occupation, or related to it only accidentally. The very activity of the individual in connection with extended selection facilitates the development of the skills and knowledge necessary for study in a higher educational institution -- that is, the individual is taught how to learn.

Therefore, extended selection offers the individual an opportunity for true vocational self-determination.

The above-mentioned characteristics of extended selection point to a possibility of forming the student body in a purposeful way, of infusing the primarily formal, statistical procedure of selection with more pedagogic content, and of turning selection into a major didactic act.

We shall mention the theoretical foundations of extended selection that provide the conditions not only for the measurement of knowledge and aptitudes, but also for the development of certain vocationally important qualities in the individual. The extended selection method is built on the most important principles of psychology, in particular those which are at the basis of the study of personality. Of these, the following are of principal significance for the selection of students in higher education:

1. the study of the individual in activity (the principle of activity);

2. the study of the individual in development (the principle of development);

3. the study of the individual in activeness (the principle of activeness).[2]

In the course of extended selection, the principle of activity is implemented by involving the individual in an activity simulating professional activity or reproducing its elements. What is meant here is not early "professionalization," which is certainly incompatible with the requirement of well-rounded individual development, but the passive and active involvement of an individual in work or a game that reproduces elements of the vocational activity of specialists or is based on this activity to some degree. Thus, a major feature of the extended selection method is that it takes account of elements or even functions of activity which are related in varying degree to the content of vocational activity, instead of being based on abstract material which is not directly linked with vocational activity.

The relationship between vocational activity and the activity which serves as a basis for selection may be expressed in the following order, in terms of approximation to the content of the former:

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[2]"Activity" is the translation used for the Russian word deyatel'nost', while "activeness" is the translation used for the Russian word aktivnost'. The distinction between these terms, as difficult to make in Russian as it is in English, occasioned some discussion at the seminar.-- Ed.

1. simulation of theoretical components of the vocational activity;

2. simulation of practical components of the vocational activity;

3. simulation of the vocational activity as a whole;

4. performance of routine elements of the vocational activity in accordance with programs of labor education through work;

5. performance of the vocational activity proper.

These types of selection-oriented activity have been listed in order of ascending closeness to vocational activities. However, they can in practice occur in a different order. That probably depends on the actual vocational activity, above all on its content (i.e., its functional structure).

Involvement of the individual in the activity is a basic prerequisite for implementing the other two principles of extended selection, namely the principle of development and that of activeness. The principle of development is intimately related to the problem of aptitudes. The aptitude of an individual finds expression in development. Thus, by basing extended selection on development, we simultaneously create the conditions for revealing and forming aptitudes. That is why the realization of the principle of development in the selection system permits an approach to the measurement of the individual's aptitude.

The principle of development is carried out by means of a hierarchy of programs of activity in the process of extended selection. The subject is directed to perform tasks of increasing difficulty (in terms of both content and the degree of direction on the part of the consulting personnel), which permits an assessment of the rate of progress in mastering an activity, the level of productive behavior (above all, the creative aspect of the activity), and manifestations of the characterological peculiarities of the individual and his physical condition.

The principle of activeness is realized in the freedom to choose or change an activity in which an individual wishes to test his potentialities, as well as in the structure and content of the individual's motivational sphere, linked in the final analysis to his purposiveness. Consequently, the principle of activeness is the most important condition for the vocational self-determination of the individual, which we have related to the conscious choice of a vocation.

Objectively, an individual should be placed in conditions which would stimulate the process of vocational self-determination. Active and purposeful work, directing the individual towards

choosing a vocation and providing for his involvement in different types of activity, should allow that to happen.

Activeness is indicated by the individual's stable, deep, and lively interest in the activity he performs. That interest, on the other hand, is the manifestation of the predominant motivation of the individual, which guides him in choosing a vocation and vocational activity.

The aforementioned theoretical assumptions of extended selection are brought to realization through special forms of organization of the individual's activity and in the method of studying it. The following institutions which have evolved in our country can be used as organizational forms of extended selection: (1) various competitions and contests held by scientific, pedagogical, and social organizations; (2) special schools which provide in-depth study of subjects connected with a vocational activity of interest to a person (such schools function as part of the system supervised by the Ministry of Public Education); (3) special schools which, along with in-depth study of several subjects connected with a vocational activity, also provide for a study of the elements of this professional activity; (4) pupils' scientific societies; (5) various technical societies run by secondary general-education schools, children's organizations, and other establishments and enterprises; (6) special courses in the fundamentals of the sciences, taught by college instructors for secondary-school senior students; (7) preparatory departments and preparatory courses operated by institutions of higher education for their applicants; and (8) vocational-technical schools, which also offer general secondary education. We shall briefly describe some of these forms which are the most widely used in our country.

Higher educational institutions operate special schools in which the in-depth study of a number of subjects is combined with elements of a vocational activity which corresponds to them. The status of these schools varies. Some are a formal unit of a higher educational institution, and their task is to train secondary-school graduates for direct enrollment in the higher educational institution. Most of the schools of this type are run on a volunteer basis, on the initiative of a department or of individual specialists in a particular field.

Preparatory departments operated by higher educational institutions, which prepare workers and peasants for entrance into a higher educational institution, have acquired great significance in the formation of the student body. At the present time, 606 of the 854 institutions of higher education boast preparatory courses, which train 97,000 students annually. Pursuant to a government decision, these courses will, in the near future, train 20 percent of all students enrolling for the first time in higher educational institutions each year.

The tenth Five-Year Plan [1976-1980--Ed.] provides for an increase in the number of vocational-technical schools that also offer general secondary education. Such schools combine broad general preparation with vocational preparation, a combination which creates extremely favorable conditions for the vocational self-determination of young people.

The activity in all the forms mentioned above reflects to greater or lesser degree the content of a professional's work, yet they serve the aims of the selection of students for higher education to a varying extent. This variation arises out of a number of factors: (1) the formal status of the organization concerned; (2) the length of time the person spends there; (3) the content of the programs of activity; (4) tendencies in the formation of the personality; (5) the level of pedagogical work; (6) the system of study of the individual; and (7) the material and technical facilities available to the organization. Depending on these factors, the organizations can conduct selection, or better still encourage self-selection by activating the process of the individual's vocational self-determination.

In carrying out extended selection, special significance is attached to the methods of research and to work on the formation of the prospective student body for enrollment in a higher educational institution.

In our view, the following directions of research on the individual should be emphasized for purposes of extended selection, each of them to be carried out by the methods appropriate to it:

1. methods for recording the comparative achievements of the students;

2. methods connected with the execution of assignments of increasing difficulty in certain fields of knowledge;

3. methods for studying dominant motives;

4. methods for developing independent cognitive activity (setting goals, planning, choosing means of doing the work, etc.);

5. methods for studying the student's state of health and physical development;

6. methods for working out assignments to improve the student's health and physical development and to compensate for deficiencies;

7. methods for studying the creative potentialities of the individual; and

8. methods for working out assignments that contain problem situations and call for independent research work, etc.

These methods do not exhaust the program of research on the individual which is needed for vocational education. They are only a rough sketch of the work necessary for conducting a process of extended selection. In view of the contemporary state of methods of student selection, it should be pointed out that planned formation of the student body ought to be based not on the exclusive use of any one method but on an optimal combination of the methods of direct and extended selection.

The following system for the planned formation of a student body achieves such a combination:

First stage -- Finding out pupils' fields of interest through contests, competitions, tests, and interviews.

Second stage -- Individual or group work with pupils who have demonstrated a sufficiently stable interest in a field of knowledge: (1) contests and competitions to reveal knowledge and inclinations; (2) information on vocations; (3) fulfillment of special assignments.

Third stage -- Activities in a special school (parallel with secondary school), or in a scientific (or technical) society according to a program providing for the systematic study of a subject by methods similar to those used at universities; various contests to find out how rapidly pupils can learn certain vocational skills and to determine their level of achievement.

Fourth stage -- Activities in a special school, or in a scientific (or technical) society, which demand a degree of independence in solving problems and developing ideas in a chosen field of knowledge; contests to find out the individual's rate of progress in learning and his creative potentialities; fulfillment of a set of functions in a vocational field; familiarization with the specializations and the corresponding curricula offered at relevant institutions of higher learning; familiarization with the "vocational diagram"[3] of the chosen labor activity; work aimed at the education and self-education of an individual in connection with the requirements of a vocation.

This plan undoubtedly calls for refinement and development. However, we firmly believe that the road to more effective learning in higher educational institutions and to quality in the training of specialists lies in the direction of long-term purposeful

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[3]The Russian word is professiogramma. -- Ed.

investigation and education of young people, which must find expression in the system of methods for forming a student body. The method of extended selection serves as the basis for the entire system of measures for achieving the vocational self-determination of the individual in order to realize these aims.

AMERICAN HIGHER EDUCATION AND THE BACHELOR'S DEGREE

Stephen H. Spurr

To understand the American degree structure, it is essential that one understand the implicit concept of American higher education as it has evolved in fact, rather than as it is nominally structured. Basically, American higher education is an open-ended system providing multiple points of entry, multiple interconnecting pathways, and multiple goals, the attainment of which is certified by the award of various academic degrees. Substantial differences in intellectual level, scholastic difficulty, and implicit status exist between the various academic programs, even within a single institution. The degrees awarded at a given level are similar, however, so that there exists little difference in explicit status among students in various programs at various institutions.

Admission to some college or university is available to anyone who either: (1) graduates from high school, or (2) receives a General Education Diploma by passing such tests as the General Educational Development (GED) examination. In addition, most community (two-year) colleges will enroll anyone over the age of 18. This means that the 25 percent of American youth who leave high school before completing it can enter at least a two-year college when they attain their majority.

Poor performance in secondary school or low scores on college-entrance examinations are thus no barrier to college entrance. While a limited number of highly selective colleges and universities have strict admission requirements based upon high-school academic grades and nationwide admission-test scores, there are many reputable institutions with more modest standards. Even some four-year institutions require only the successful completion of a secondary-school academic program for admission. In the state of California, the component institutions of the University of California admit the best students from the high-school graduating class, the units of the State College and University system admit the next fraction, and the widespread community college system takes the rest. A similar but informal stratification characterizes private colleges and universities.

Once admitted, students may continue or they may drop out or they may "stop out" and resume their studies at a later date. They may transfer "up" to a more prestigious institution or "down" to a less rigorous one as their academic performance and career objectives dictate. Students may complete a community college and then transfer to a four-year institution, provided that they have earned the same academic average required by the admitting institution for its own continuing students. Even the most selective institutions will accept superior transfer students from

less selective colleges after two years of study to the extent that they have places available. Conversely, some students in four-year institutions transfer to two-year institutions, usually because they find that they prefer a practical vocational or technical training to a program oriented to the liberal arts. At the other end of the scale, students who fail are not barred from further collegiate study but may start over again at any time, usually in a community college or in a university extension program.

A similar re-sorting takes place upon award of the bachelor's degree. Many students find their educational objectives fulfilled at this point. Others continue on into graduate or professional study. They may move up into a more prestigious institution or settle for a less competitive alternative. A graduate of Harvard may take a year's additional work in education to certify himself or herself as a school teacher, while a graduate of a state college may be accepted as a doctoral student in phsyics at the University of California at Berkeley. Again, there is no permanent barrier for anyone at the bachelor's level. At least some paths of post-baccalaureate education are open to all bachelor-degree holders, and persistence along these branching paths can always lead to the top for a few intrepid travelers. Stopping out to work for a time is a valid, respectable, and even desirable option.

There is also flexibility in the choice of academic programs. The usual four-year bachelor's degree program consists of 40 to 60 percent of general liberal-arts courses, the rest of the program consisting of concentration in a particular liberal-arts discipline or in a bachelor's level professional program. Students thus do not choose a major area of study until about halfway through their undergraduate career, and many academic programs have sufficient built-in flexibility to allow students to change their field of concentration one or more times with little or no loss of time and academic credit. Students may also change their field of study upon entering graduate school, though this may involve extra work and more time.

It should be emphasized that the status or rank of an institution is subjectively determined and is totally unofficial. Every college graduate receives a bachelor's degree of equal face-value. To assign "market-value" to the degree, however, both the field of study and the granting institution must be taken into consideration. A bachelor's degree in physics from California Institute of Technology, a private and highly selective institution, qualifies the holder for quite a different market than does a bachelor's degree in elementary education from a small state college, even though the degree itself is the same. Although a number of studies have dealt with the ranking of American college and university programs, the rankings are unofficial, approximate, and subject to dispute. In practice, the ranking that is important

is that envisaged by the individual student who assesses his choices and attempts to place himself in terms of that assessment.

Thus, the structure of American higher education is oriented to the academic and career choices of the student. Each academic program unit within a college or university normally will accept the best students it can attract up to the number it can handle. As a result, admission standards vary according to the institutional as well as to the academic degree requirements. The student, however, has free choice of institutions within his ability to be accepted by the college or university of his choice. A variety of pathways are open from the age of initial college entrance onward. These pathways can be entered upon at several points and can merge and diverge throughout the student's educational journey. Hopefully, the best will reach the top and all will maximize their usefulness to society at the ultimate level they manage to reach. This level is characterized not only by degree awarded but also by the institution which awards the degree and the field of study certified. Within the context of this structure, the bachelor's degree universally certifies the satisfactory completion of an undergraduate program, usually of four years duration, in any American institution of higher education.

The Academic Credit System

Students ordinarily enter college upon the successful completion of 12 years of elementary and secondary education. At the time of entrance, 74 percent are 18 years old and 16 percent are 19. More than three-quarters are from the top half of their high-school class while only three percent are from the lowest quartile. More than 75 percent of all youth complete secondary school, and of these nearly 60 percent (i.e., 45 percent of all youth) enter college.

Of the more than two million youth who entered higher educational institutions in 1972, one-half enrolled in four-year institutions and one-half in two-year community or junior colleges. About 80 percent (1,738,000) entered upon degree-credit programs, and of them 60 percent (1,108,000) enrolled in four-year institutions.

As of 1972, there were 8,265,000 students enrolled in a total of 2,665 colleges and universities in the United States, of whom 6,378,000 were undergraduate students, a group constituting 42 percent of the population 18 to 21 years old. Enrollment was (and is) fairly evenly divided among universities, other four-year institutions, and two-year institutions, but over one-quarter of the total enrollment is found in the 94 major public universities. In the same year, 1,140,000 academic degrees were awarded, of which 840,000 were bachelor's degrees marking the successful completion of four years of undergraduate study.

Certification of the completion of the four-year undergraduate academic program is through the conferring of a bachelor's degree. The Bachelor of Arts (B.A. or A.B.) and the Bachelor of Science (B.S.) degrees are granted in the liberal arts, a generic category including the arts and humanities, the social and behavioral sciences, and mathematics and the natural sciences (biological and physical). In the U.S., in contrast with western Europe, the arts and sciences faculties are generally combined in the same college, although in some very large universities they may be subdivided into three or four colleges or faculties. Nearly 50 percent of bachelor's degrees are taken in these traditional fields of university study. There is no consistent difference between the B.A. and the B.S., although various faculties have drawn distinctions between the two in one way or another.

The bachelor's degree is also awarded by professional schools upon completion of four-year undergraduate studies in education (21 percent), business and management (14 percent), engineering (6 percent), fine and applied arts (4 percent), and a wide variety of undergraduate-professional as contrasted with graduate-professional fields. Where the curriculum embodies more or less the same distribution requirements as the comparable liberal-arts baccalaureate on the same campus, and where a reasonable amount of liberal-arts content is included in the field of concentration, the B.A. or B.S. is commonly given. Through the device of borrowing these standard degrees from the liberal-arts faculties, the undergraduate-professional schools may emphasize the liberal and preprofessional content of their bachelor's programs and perhaps add luster to them by association. In contrast, where the bachelor's program is clearly professional in content and intent, professional bachelor's degrees are more appropriate. Among the most common and the best established are Bachelor of Science in Education or Bachelor of Education; Bachelor of Music; Bachelor of Business Administration or Bachelor of Science in Business Administration; Bachelor of Science in Engineering; and Bachelor of Fine Arts.

The bachelor's degree is granted on the accumulation of a specified number of credits awarded for the completion of formal courses. American universities schedule formal lectures and other classroom activities either for two 15-week semesters or for three 10-week quarters, during the nine-month academic year beginning in late August or September and ending in May or June.[1] A course that meets three times a week typically carries credit for three semester-hours or three quarter-hours, depending upon the length of the academic term. A normal course load is 15 hours a term. Thus, the usual basic requirement for the bachelor's degree is the satisfactory completion (usually with an average grade of C or

[1] Academic terms during the summer months are usually optional and of shorter duration.

better) of 120 semester hours or 180 quarter-hours. Credits are generally transferable from one institution to another, but the institution that eventually grants the degree generally requires that at least one year's work, usually the last year, be completed on that campus.

A major problem of our present system of measuring academic progress through the course credit system is the recent trend toward both credit inflation and grade inflation. One semester-hour has become accepted as the unit of credit earned by attending and participating in a course that meets one hour a week for a 15-week semester, passing a final examination of two to three hours in length, and completing regular outside assignments which may include the writing of at least one major term paper. Unfortunately, these standards are being severely eroded, particularly in extension courses. To cite but one flagrant example, a California university offers three hours of credit for attending a professional meeting and listening to papers for a total of ten hours. Similar academic credit is freely given to adults taking a travel tour led by an expert who lectures to them daily on what they have seen or what they are about to see. Some "degree mills," masquerading under the name of "non-traditional study," offer academic credit for knowledge claimed from work experience or for minimal attendance at what amounts to occasional extension classes. Even reputable universities are more and more often granting residence credit to students who attend classes in a distant city or town taught by an individual who has never been on the home campus or been seen by a member of its academic administration.

Grade inflation constitutes a similar problem. During a decade in which scores on college-entrance examinations have tended to decline year after year, the average grades earned at many if not most colleges have increased. So also has the number of students earning academic honors, such as being elected to Phi Beta Kappa, the nationwide undergraduate scholastic honor society. Whereas the average grade a quarter of a century ago was a C, it is now closer to a B. In years past, very few students graduated from college with an average higher than 3.5 (on a scale where A = 4, B = 3, C = 2, D = 1); now substantial numbers do so. This trend has been exacerbated by pressures for admission to professional schools, especially in medicine, veterinary medicine, dentistry, and law. To gain consideration for admission, a high grade-point average is an essential prerequisite. Many students thus feel forced to place greater emphasis upon high grades than upon learning, and many faculty feel that they have no choice but to go along with the trend. The sad fact is that neither academic credits nor the grades associated with them have the validity they used to have. This fact is giving increased importance to national examinations which are carefully controlled to yield scores that have equivalent meaning year after year.

Degree Requirements

Over the years, the four-year bachelor's program has varied from a tightly planned curriculum of required courses to a free elective system which permits students to select their academic programs within only broad restraints. At present, however, the normal program is based on two sets of requirements: (1) distribution requirements, usually met during the first two years (underclass level); and (2) concentration requirements, mostly met during the last two years (upperclass level).

The distribution requirements are designed to ensure that all students have some exposure to a range of subject matter -- English, a foreign language, humanities, social sciences, mathematics, and natural sciences. The University of Texas at Austin presents a typical case. For the B.A. degree in arts and sciences, it requires of all students nine semester hours of college-level English, a fourth-semester proficiency in a foreign language, 18 hours in the social sciences, 15 hours in college-level mathematics and natural science, and six hours in humanities and the arts. Students entering college without either deficiencies in English and mathematics or without advanced standing earned through prior examination thus have to take 60 semester hours out of the 120-hour degree program to meet their distribution requirements.

During the last two years, the student is expected to concentrate upon a major discipline. At the University of Texas, the major cannot include less than 21 or more than 36 semester hours of course work. Eighteen of these must be taken in residence, and 24 of the last 30 hours must be taken at the institution granting the degree. Other limits are imposed both by the college faculty with regard to general degree requirements and by departmental faculties with regard to special requirements for the various disciplines. The pattern is generally similar for undergraduate professional programs except that the distribution requirements are usually more limited and the concentration requirements are much heavier and include a large proportion of professional courses.

Although the bachelor's program requires attendance for four nine-month academic years, students can readily complete it in three years by: (1) receiving advanced standing through examinations taken before college entrance, (2) taking heavier course loads during the academic year, and/or (3) attending summer courses. Other students may need more than four years because they take lighter course loads for scholastic, economic, or social reasons, or because they stop out to earn money to attend college or simply to mature.

Thus, the bachelor's degree program is characteristically divided into two parts, one of generalized study and one of specialized study within an academic discipline or profession. Furthermore, an increasing number of students fulfill their

general-education requirements at a two-year community or junior college before transferring to a four-year institution, earning an associate degree after the completion of their first two-year program. The question naturally arises as to whether or not the four-year bachelor's program should not be formally divided into two two-year segments. The associate degree could be granted to all students upon the completion of at least 60 semester hours of work and fulfillment of the general-education requirements. The bachelor's degree would then be granted upon the completion of 60 additional hours and fulfillment of specialization requirements in a major discipline, concentration area, or undergraduate field. In my book, Academic Degree Structures, I have argued that requiring the earning of an associate degree before admission to a bachelor's degree program would not only make sense academically, but would also have the practical effect of providing a convenient and socially acceptable stopping point for the many students who find that their educational aspirations are satisfied with two years of college study or who are simply not qualified to progress further. In other words, such a practice might convert many dropouts into associate-degree holders who voluntarily stop out. To date, however, this suggestion has resulted in little debate and almost no support.

To summarize, the bachelor's degree involves a nominal four-year program, entered upon after graduation from high school at the age of 18 or 19, and is granted upon the completion of 120 semester hours of academic work (or its equivalent in terms of number of courses or quarter-hours) selected from specified groups to meet both a general-education and a specialized-education requirement. The requirements for the degree are thus essentially based upon the accumulation of credits rather than upon the attainment of a certain level of intellectual competence or upon the mastery of any common body of knowledge. The degree simply records the successful completion of a number of requirements, the general nature of which are common to most institutions but which vary greatly in specific detail as to their intellectual content, subject matter, rigor, and difficulty.

Alternative Routes to the Degree

The academic requirements for the bachelor's degree are under constant review by departmental and college faculties. Typically, the concern is with detail. For example, the nature and the amount of required English courses, and whether or not a competency in a foreign language should be required, are endlessly debated. The difficulty of a program is often correlated with the amount and level of mathematics and foreign-language competence required. On large campuses, the better students tend to elect programs requiring either a solid basis in mathematics and "hard" science or multilingual proficiency, while the less self-assured congregate

in programs where little or no college-level mathematics, natural science, or foreign languages are required.

Student pressures are generally toward a free-elective system which effectively enables students to avoid intellectually difficult disciplines if they wish, while faculty members tend to push for more required work by the students in the members' chosen field of competence. Recent trends and issues with regard to the bachelor's program can be subdivided into efforts to achieve greater flexibility on campus and an increased interest in off-campus "non-traditional" alternatives to meeting degree requirements.

Increased use is being made of advanced-placement examinations which enable better-qualified high-school graduates to earn credit through examination for college-level work done in secondary school. For students who have reached the college level of education outside the classroom, academic credit may be earned by examinations, such as those in the nationwide College-Level Examination Program (CLEP).

On campus, reliance upon formal lecture-discussion courses continues to be lessened. Increased use of seminars and independent study in place of lecture courses diversifies the academic program pedagogically at institutions where such relatively expensive instructional techniques are financially feasible. For practical financial considerations, many large state universities are compelled to restrict such opportunities to students who are in "honors" programs or are otherwise identified as being on a special and favored track. Such students often also are excused from many academic program requirements which must be met by the normal candidate for the bachelor's degree.

Many campuses have formal arrangements for granting academic credit for a semester or an academic year abroad (usually during the third or junior year) either at foreign universities or through branch extensions of American universities. Such programs have suffered in recent years, however, as rates of currency exchange have become more unfavorable to the U.S.

Currently, considerable interest exists in granting academic credit for experience in the "outside world" -- i.e., in non-academic activities. Programs for undergraduates in the liberal arts based upon alternating terms of study on campus and work off campus have for years been a feature at Antioch College, Northeastern University, and a number of other institutions. Required off-campus internships are common in professional programs at both the undergraduate and postgraduate levels. Recently, however, efforts have been increased to develop techniques of granting credit for a wide range of off-campus experience obtained through work, community service, national service, and the like. One federally financed program, UYA (University Year for ACTION), offers the opportunity of earning up to one year of academic credit while working full time

in community agencies and organizations that provide services to low-income and other disadvantaged segments of the population. More than 50 universities are participating. The problem of defining criteria for assessing and granting credit for these and other off-campus experiences has yet to be solved in a widely accepted way.

The innovative trends described represent efforts to liberalize the ways and means through which academic credits can be accumulated to achieve the semester hours required for the granting of the bachelor's degree. They do not in themselves reduce this requirement in any way. Efforts to reduce the normal time span for the baccalaureate from four years to three have been made repeatedly but have proved consistently unsuccessful. The most recent was the recommendation to this effect from the Carnegie Commission on Higher Education. To assay the present-day potential of a time-shortened baccalaureate program, the Carnegie Corporation made financial grants to 12 institutions to experiment with various approaches. Although the final results are not in, the progress to date has not been particularly encouraging, to judge from the proceedings of a 1973 conference on the subject. As of 1975, it would appear that most institutions will continue to require the equivalent of four years of undergraduate education, defined as 120 semester hours or its equivalent, but to liberalize the alternative ways in which these credits may be earned.

Interest in other "non-traditional" ways of meeting degree requirements has been aroused by recognition of the fact that the demand for higher education was not restricted to young people in the 18 to 24-year-old group who could attend a conventional institution of higher education on a more or less full-time basis. Among the "new students" were those who were working full time, women desiring to return to the labor market after rearing their children, citizens interested in broadening their backgrounds, and retired persons looking for new interests. Under the principle that full educational opportunity should be realistically available and feasible for all who may benefit from it, whatever their condition of life, a fresh look has been taken at alternatives to classroom instruction.

Actually, all the techniques mentioned have long been a part of the American educational scene. Summer-school programs have long catered to teachers and others who wished to attend college during vacation periods. Evening and correspondence courses have been widely available on campus and in most cities and towns through university extension divisions. More recently, courses have been offered for credit on educational television. To a limited extent, all these types of off-campus courses could be credited against the requirements for a bachelor's degree. The limitation was that only a minor part of the degree could be so earned, and that at least a year's work, usually the final year, had to be taken in residence on campus.

To overcome this obstacle in the American system of higher education, a number of non-traditional degree programs have been initiated. The Commission on Non-Traditional Study, which was active from 1971 to 1973, assessed the state of affairs and recommended actions for the future. The movement is too recent to permit full evaluation as yet, but there seems little doubt that non-traditional programs are here to stay.

Institutional Evaluation

During the three centuries that the bachelor's degree was awarded in the U.S. solely or predominantly on the accumulation of credits earned by taking formal courses in residence, the problem of equivalence of degrees was a relatively simple one. Furthermore, until the 1860s, the number of institutions was small enough that peer judgment could be used to assess a program's reputation adequately for most purposes. Only after the Morrill Act of 1862 and the consequent establishment of a large number of public institutions did the need for formal accreditation arise. As a result, regional accreditation associations grew up, through which teams of scholars and academic administrations would visit an applicant institution, examine its organization, its faculty, and its academic programs, and formally recommend or not recommend its formal accreditation. Credits from accredited institutions were and are usually accepted at face value by other institutions.

In recent years, though, it has become apparent that simple institutional accreditation is not sufficient in itself to establish the equivalence of academic effort. One problem is the great increase in number of institutions and the fear that accreditation standards are not sufficiently stringent at some of them. Another is the tendency toward grade inflation, already referred to above. Still another has been the problem of how to evaluate work done off campus in non-traditional modes or on campus through independent study, self-paced instruction, and other arrangements outside the classroom.

One answer has been increased reliance upon carefully conceived and carefully standardized national tests. Major non-profit testing agencies, including the College Entrance Examination Board, Educational Testing Service, and the American College Testing Program, have developed to fill these needs. ETS, for example, serves the College Entrance Examination Board in offering the College-Level Examination Program in a variety of subjects to measure competence at the general introductory course level, and also serves the Graduate Record Examination Board in offering tests to evaluate students' competence in a discipline at the completion of undergraduate work.

With increased use being made of national tests to supplement or even supplant conventional course-by-course grading at a

university, the possibility emerges of accumulating credits toward a bachelor's degree simply through a national testing process, bypassing conventional institutions of higher education altogether. Indeed, proposals are being seriously considered for a national degree conferred on the basis of credits earned by passing examinations. A related proposal is for an "educational passport," which an individual would carry throughout life and in which all educational achievements, whether traditional or non-traditional, would be formally recorded. Both the proposal for a national degree through examinations and that for an educational passport imply the establishment of some type of national evaluation and certification system. The American Council on Education has recently established a Task Force on Educational Credit and Credentials to undertake a two-year effort at developing a philosophical and theoretical system of credits and credentials which can serve all educational alternatives, including traditional classroom learning experiences.

With such possibilities in mind, the question of what should be tested needs to be answered in terms of what should be taught. Is there any common body of knowledge that students in a particular discipline should comprehend? In some subjects, particularly the natural sciences, the answer is obviously yes; in others, faculty within the field disagree. For example, faculty committees recruited from across the country failed to agree upon a sufficient common denominator in anthropology to justify the Graduate Record Examination Board in continuing to offer a test in that discipline. A more fundamental approach is currently being developed by Jonathan R. Warren of Educational Testing Service, who is attempting to define expectations for student learning through the analysis of course content in a number of four-year programs.[2] Such studies are critical to the development of national examinations designed to test subject-matter competence.

The increasing diversity of American higher education thus raises many issues as to how standards can be set to define and measure the competences achieved by individual students without unduly standardizing what is expected of them. How do we equate course-derived knowledge with competence developed on the job? How can we set and maintain standards while encouraging diversity? Is there really any equivalence of degrees? If so, how can we standardize the degrees awarded by different institutions? How do degrees granted in the United States relate to degrees granted in

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[2] A paper by Dr. Warren, "Faculty Views of Academic Competence," was distributed to seminar participants, although there was not enough time to translate it into Russian. A revised version of this paper appeared in an ETS periodical publication, Findings, Vol. III (1976), No. 2, pp. 5-8. --Ed.

other major countries? These and many similar questions have arisen as we have departed from a lock-step bachelor's degree program taken in residence by a limited number of mutually accredited colleges and universities and have developed instead a wide range of bachelor's degrees granted for the accumulation of credits awarded in various contexts at a large number of highly diverse institutions.

The American system of higher education is indeed open-ended and is characterized by multiple points of entry, multiple interconnecting pathways, and multiple goals. We should be able to find ways and means of measuring students' progress within it fairly and of accurately certifying their accomplishments without destroying the diversity and flexibility that we have developed over the years.

ON THE COMPARABILITY OF LEVELS OF EDUCATION IN THE USSR AND FOREIGN COUNTRIES

V. M. Kuznetsov
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In the present period, we are witnessing a considerable expansion of international cooperation in solving complex scientific and technological problems. A good example of such cooperation was the preparation and execution of the joint flight of the "Soyuz" and "Apollo" piloted spaceships carried out by Soviet cosmonauts and American astronauts in 1975. One can also mention a number of other projects carried out by the joint efforts of scientists and experts from different countries. Such cooperation contributes to a better understanding between nations and is mutually advantageous for them. In this connection, it is essential to have an accurate conception of the scientific potentialities of foreign experts, or of specialists who have been trained abroad and whose skills are attested to by appropriate certificates, diplomas, or other academic credentials.

The accelerating pace of the scientific and technological revolution makes it imperative for many countries to obtain outside aid in training experts and scholars in various fields of science, technology, and culture. The economically advanced countries in turn need exchanges of knowledge to explore new areas in science. As part of this, there is a growing exchange of professors and teachers to transmit their experience in the training of specialists, and young people are sent from one country to another to receive all or part of their education. Young people in a number of countries where particular branches of science, technology, or culture have not been well developed strive to get their education and scientific training in countries where these branches are at a high level of development.

Owing to lack of adequate information concerning the levels of education and training in different countries, young specialists or scholars trained abroad, after they come back to their own country, often either are not considered suitable for the positions for which they have been trained or are appointed to jobs for which they are not fully qualified. In other words, diplomas and academic degrees and titles obtained abroad are either undervalued or overvalued.

Before admitting young people to educational institutions or refresher training centers, it is necessary to assess the educational level or scientific qualifications which the prospective students have obtained in their own countries.

Consequently, to promote international cooperation and mutual assistance in training specialists and scholars, it is essential to establish the equivalence of academic credentials, degrees, and titles. A person getting an education, or an academic degree or title in a foreign country must also know the comparative value of diplomas to be able to choose a sphere of activity or a career in the country in which this person intends to work after graduation.

In recent times, the contacts between the USSR and many other countries in the field of education have been considerably expanded and strengthened. In 1972, the Soviet Union and nine other socialist countries signed a convention on mutual recognition of graduation certificates of secondary, specialized secondary, and higher educational institutions, as well as of documents conferring scientific degrees and titles. Many foreign countries are also expanding their international contacts in the field of education. The clearest example of this is the significant increase in the number of students studying outside their own country. From 1960-61 to 1968-69, the number of foreign students in 124 countries practically doubled, rising from 236,000 to 440,000, an average annual growth of 8.1 percent. The estimate for the 1973-74 academic year was 1,000,000.[1] In the United States alone, according to data of the Institute of International Education, there are about 140,000 foreign students. Naturally, such a large number of people studying abroad should be assured that their academic credentials will be recognized in their own country as well as in third countries.

The problem of the equivalence and comparability of educational documents and academic degrees and titles was given much attention at the Conference on Security and Cooperation in Europe. The Final Act, signed by 35 participating states, including the Soviet Union and the U. S., points out in particular that promoting a more exact assessment of the problems of comparability and equivalence is one of the ways of developing relations of an international character in the fields of education and science and contributing to better mutual understanding among nations.

Comparison of levels of education is one of the most complicated and important problems in the comparative analysis of the educational systems of different countries. The system of education in each country is the result of its historical development under its specific economic, social, political, and other conditions. In addition, the tasks and purposes growing out of these conditions, the methods of instruction, the content of education, the skills of teachers, etc., also contribute their imprint.

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[1] A. T. Ballestero, "From equivalence to evaluation: appraising the man, not the diploma," UNESCO Chronicle, 1974, No. 4, pp. 145-149.

The first explorations made by UNESCO into comparison of levels of education and the equivalence of academic credentials did not produce the desired results. The analysis of educational systems on the basis of the content of education revealed that the problem of equivalence as such was nonexistent. W. D. Halls' studies of the curricular content of the last stage of general secondary education in Britain, the U.S., France, Cameroon, Argentina, USSR, Czechoslovakia, and the Philippines, in the subjects of mathematics, physics, chemistry, botany, and the native language, showed that there were substantial dissimilarities.[2] Even greater differences may be found in the curricula of institutions of higher education, where types of specialized training are shaped to meet the needs and conditions of the society and the economy, divergence being especially pronounced where no unified curricula are in existence. For this reason, the term "equivalence" must not be taken literally; rather it should only be regarded as suggesting comparability of levels of education, their sequence, and, on this basis, recognition of academic credentials that certify completion of education at the levels concerned.

An important contribution to the solution of the problem of equivalence was made by the late A. I. Bogomolov,[3] a Soviet scholar, who proceeded from the assumption that the common objective of higher education in all countries is to train in the shortest possible time creative specialists who could extract everything that was useful from the accomplishments of world science and technology to ensure further scientific and technological progress and the solution of new problems faced by society. Taking into account also the fact that, in highly developed countries with different systems of education, scientific and technical problems of similar complexity are successfully solved by their respective experts, Bogomolov drew the conclusion that different educational systems in several countries provide for the training of specialists of approximately equal qualifications, and therefore it is possible to work out parameters by which levels of training of specialists can be compared. The method he proposed for higher engineering-

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[2] W. D. Halls, International equivalences in access to higher education (UNESCO, 1971), p. 137.

[3] A. I. Bogomolov, "Ob ekvivalentnosti diplomov vysshikh inzhenerno-tekhnicheskikh uchebnykh zavedenii" (On the equivalence of the degrees of higher engineering-technical educational institutions), Sovremennaya vysshaya shkola (Contemporary Higher Education), 1973, No. 1-2, pp. 61-70; and Comparabilité des régimes d'études et des diplômes en sciences de l'ingenieur (UNESCO, 1974), p. 102.

technical educational institutions is based on the introduction of an integral criterion of the scientific level of education according to unmeasured parameters. The method is based on the identification of a set of general science and general engineering subjects in the curriculum as being essential for the training of engineers. Consideration is also given to the scope of specialized subjects, laboratory and practical work, the use of instructional technology, and the level of faculty qualifications. The advantage of the method is that it makes possible a solution to the problem of equivalence without a detailed study of the content of education.

Another approach to the problem of equivalence, which is currently predominant, is a formal approach based on bilateral and multilateral agreements concerning the recognition of credentials and academic degrees and titles. A great deal of work of this kind is being done by UNESCO, the Council of Europe, and the Organization for Economic Cooperation and Development. Special attention is being given to the problems of admitting foreign students to the higher educational institutions of other countries.

In 1953, 15 member nations of the the Council of Europe signed a European Convention on the Equivalence of Educational Documents, which conferred the right of admission to universities in the signatory countries. In 1964, a smaller number of countries signed a protocol extending the scope of the 1953 Convention. In order to broaden access to the universities of the participating states, the protocol provides for recognition of the academic credentials of other countries, when those credentials have been recognized by one of the signatory parties. This applies, for the most part, to academic credentials issued in former colonial countries.

However, the 1953 Convention and the 1964 protocol do not affect the rights of autonomous universities, not controlled by a government. For example, the universities in Great Britain, which are autonomous educational institutions, accepted the Convention only as informational, not as a binding agreement. A similar situation exists in other countries where foreign students are admitted to higher educational institutions in accordance with the practices governing the admission of their own citizens. Two main trends can be noticed here. In countries where the selection of students is made within the framework of the secondary school, as for example in France, lower standards are set for admission than in those countries where selection among applicants is made by the institutions of higher education.

The approaches to dealing with the problem of admitting foreign students to higher educational institutions can be broadly classified as formal, intermediate, or empirical. An example of the formal approach is that used in France, which has concluded a series of agreements with other countries under which secondary-school diplomas entitle their holders to be admitted to the

French universities. The British universities, as a rule, issue a list of recognized certificates but are prepared to consider other documents, too -- an example of the intermediate approach. In the U.S., selection among applicants is made by an empirical method, with emphasis on the candidate's level of preparation, though in some cases documents may also be considered.

Of great interest is the introduction of a European Secondary-Education Baccalaureate Certificate in a number of special schools of the countries of the European Economic Community. Special curricula have been worked out for these schools on the basis of a study of the pertinent subjects in the schools of the participating states. The first examinations for this Certificate were administered in 1967; in 1970, over 400 candidates were admitted to the examinations. At present the Certificate is recognized in about 40 countries.

The 1956 European Convention on Equivalence of Periods of University Education and the European Convention on Academic Recognition of University Qualifications (both drawn up within the framework of the Council of Europe) are examples of equivalence agreements which include higher education. Other examples are the Convention on Mutual Recognition of the Equivalence of Graduation Certificates for Secondary, Secondary-Technical, and Higher Educational Institutions; the documents on award of academic degrees and titles signed by 10 socialist countries in 1972; and the Regional Convention on International Recognition of Levels and Degrees in Higher Education in the Nations of Latin America and the Caribbean.

The 1956 Convention stipulates the recognition of the equivalence of periods of study of modern languages among member countries of the Council of Europe, on condition that the administration of the foreign university issues to the student an appropriate certificate testifying to the completion of the period of study. In respect to other subjects the commitments are limited, but it is stipulated that the states will study the possibility of recognition through unilateral and bilateral agreements.

Under the 1959 Convention, the participating states recognize university qualifications conferred on the territory of the contracting parties. This enables the holders to continue their higher education in any of the countries for the purpose of obtaining more advanced degrees. It should be pointed out that the Convention of the Council of Europe does not extend to professional activities but merely affirms the possibility of continuing one's education.

Greater possibilites are presented by the 1972 Convention signed in Prague by a number of socialist countries. The Convention considers as equivalent all certificates of completion of secondary education (whether general or technical) entitling the holder to enter a university or other institution of the university type;

documents that certify completion of institutions of higher education and that entitle the holder to pursue a scientific degree; and academic degrees and titles awarded by educational institutions and research institutes on the territory of the participating states.

The Regional Convention on International Recognition of Levels and Degrees in Higher Education in the Nations of Latin America and the Caribbean, signed by 17 countries of Latin America, was the first international agreement drawn up under the aegis of UNESCO. The Convention provides both for the possibility of continuing one's education in the higher educational institutions of contracting countries other than one's own and the recognition of the equivalence of diplomas, degrees, and titles obtained in these countries, and for the opportunity to work according to one's qualifications regardless of the country in which they were obtained. The Convention pursues the following objectives: the use of the best methods of training within a particular region, elimination of obstacles encountered by foreign-educated persons upon return to their home country, and a broader and more effective use of human resources within the entire region to prevent a "brain drain."

In keeping with the recommendations adopted by the UNESCO General Conference at its 15th Session, other regional and multilateral agreements are now also in preparation. For instance, conventions similar to the Latin American one are being drawn up for the European and Arab countries of the Mediterranean region, for the Arab countries, and for the countries of Africa, with a view to working out, in the long run, a universal convention covering many countries of the world.

This objective was reflected in the work of the Committee of Experts on the Award of Degrees and Diplomas in the Nations of Europe, which met in Helsinki on September 20-24, 1975. The Committee of Experts was convened under a resolution of the 18th Session of the General Assembly of UNESCO. The Committee expressed the desire that the UNESCO Secretariat continue work toward the earliest possible drafting of a multilateral convention on comparability and recognition of educational systems and of diplomas in higher education. The Committee also defined the aims of such a convention, of which the basic ones are to contribute to the development of cooperation and mutual understanding of all countries of the European region; and to ensure mobility of students, teachers, and researchers of both the European and the third-world countries, which would promote their economic and cultural development and help them to perfect their educational systems and adapt them to the requirements of scientific and technological progress. The convention is expected, on the one hand, to take account of the experience accumulated in drawing up bilateral and multilateral agreements, and on the other hand to become a model for new agreements stimulating governments and higher educational institutions to carry on such work. The convention should be dynamic and take account of the possible or desirable changes in systems of higher education. The basic provisions of the convention should rest upon

a definition of levels in education. The latter, in our opinion, is a very important and complicated problem, requiring the most careful analysis.

In summary, it may be said that the problems of equivalence involve the solution of the following basic questions:

1. the admission of foreign citizens into higher and other educational establishments;

2. recognition of periods of study in one country for students wishing to complete a full cycle of studies in another country;

3. recognition of degrees (diplomas) received in one country by students wishing to continue their education on a higher level in another country;

4. recognition of qualifications received in one country for purposes of obtaining appropriate employment in another country.

The first three are viewed as university or academic equivalence. The fourth is defined as administrative or juridical equivalence.

The problem of administrative equivalence is more difficult to solve, for in many cases it goes beyond the framework of the educational system and depends to a great extent on the mechanism of establishing educational levels in each particular country. Two types of systems may be distinguished: centralized, i.e., under complete control of a government which determines educational standards and the introduction of unified programs, and educational forms and methods; and partially decentralized, when various groups of private or autonomous educational institutions pursue an independent educational policy. In this latter case, educational standards are maintained through some sort of external factors, such as the practice of having secondary-school graduation examinations administered by the universities (Great Britain) or by professional societies and associations (Great Britain and the U.S.), or through a system of accreditation of educational institutions (the U.S.), etc.

Especially difficult is the matter of recognizing professional titles in those cases when this is the function not so much of the state as of numerous professional non-governmental organizations and associations which are external to the educational system. This refers particularly to developed capitalist countries with deep-rooted professional traditions (Great Britain, the U.S., France). Consequently, for more effective implementation of an agreement to recognize diplomas, degrees, and professional titles, consideration must be given to the degree of centralization of the educational system and the uniformity of the conditions for recognizing qualifications. If this is all under the complete control of the state, the treaty has full juridical

force and covers all types of education and qualifications of the contracting parties. In such a case, establishment of both academic and administrative equivalence is possible. In those cases where the establishment of a standard of qualifications is not the function of state organs, establishment only of academic equivalence is more practicable.

Especially difficult for a formal solution of the problem of equivalence is the determination of corresponding levels and types of education. Levels of education may be divided into primary, secondary, and higher; types, into general and vocational. General education may be primary and secondary, although recently it has penetrated higher education, as illustrated by the study of foreign languages and several of the social sciences in all the higher educational establishments of the USSR. Vocational education may be vocational-technical, secondary specialized, or higher. Vocational education is based on general education and includes its elements. For example, vocational-technical education presupposes a primary or secondary general education; secondary specialized presupposes a general secondary education; and vocational higher education presupposes a general secondary or higher education.

In most foreign countries such a clear-cut distinction is lacking. The greatest difficulty in the educational systems of foreign countries is to identify specialized secondary educational institutions. As a rule, educational institutions of this type, as well as all post-secondary educational institutions (i.e., institutions that admit persons who have completed secondary school) are classified as higher educational institutions. In most cases, the higher educational institutions, including the universities, combine the training of specialists at the secondary, higher, and even vocational-technical levels. Moreover, higher education itself has several cycles, and the completion of each cycle entitles the student to a corresponding degree or a diploma.

We shall now analyze in greater detail the tasks and the structure of the educational system of the Soviet Union.

In accordance with the Fundamentals of Legislation of the USSR and the union republics concerning public education, the educational system of the USSR includes preschool education, general secondary education, vocational-technical education, secondary specialized education, and higher education. Unity and continuity of all educational steps from preschool to higher are characteristic features of the Soviet system of education. Let us consider each type of education and try to identify analogous types in foreign countries, taking account of the combination of general and vocational education.

General secondary education, which may be preceded by organized preschool education in kindergartens, is provided through a network of secondary general-education schools, which accept children at the

age of seven. The period of study in the secondary schools is 10 years.[4] The secondary general-education school is a unified, work-oriented, polytechnical school. The unity of the general secondary-education school is ensured by the common principles of the organization of the educational process and by the basically uniform content and level of general education throughout the entire USSR. The secondary general-education school in the USSR prepares students for work and a conscious choice of vocation. Persons completing eight grades can receive a certificate which entitles them to continue their education at vocational-technical or secondary specialized educational institutions or at a general-education secondary school.

Those finishing a secondary general-education school are given a secondary-education certificate. These graduates may be admitted to higher or to secondary specialized educational institutions or to technical academies. In the USSR, the general-education secondary school provides to all citizens of the USSR equal opportunities to continue education in vocational-technical, secondary specialized, and higher educational institutions.

In foreign countries, despite the variety of general-education secondary schools, two common features can be perceived: educational differentiation, which is especially manifested in the final stage of secondary education, and the preparation of students for entrance into higher educational institutions rather than for practical activity. The period of study at general-education secondary schools is 10 to 12 years. Differentiation of education in secondary general-education schools occurs along at least two lines: the natural sciences and the humanities. In some countries -- for example, Great Britain -- educational differentiation is connected with substantial freedom to choose the subjects of study. In these cases, the concept of "general education" can be defined as the sum total of knowledge necessary for entrance into educational institutions offering an appropriate kind of training -- specifically, the universities or so-called "educational institutions of the university type." The number of students finishing the secondary general-education school and having the opportunity to enter a university is small in comparison with the total mass of students of the secondary general-education schools, who may continue their studies at vocational-technical and other less privileged educational institutions.

Hence, the Soviet document certifying the completion of secondary education can be formally compared with a certificate of general education issued upon completion of a full course of study in a secondary general-education school and enabling the holder to enter a university or other institutions of the university type in the given country.

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[4] In the USSR there are also general-education secondary schools where pupils study for 11 years.

Vocational-technical education in the USSR is offered in three types of educational institutions: vocational-technical academies, secondary vocational-technical academies and technical academies. Vocational-technical educational institutions train skilled workers.

Admission to vocational-technical and secondary vocational-technical academies is open to persons having an intermediate secondary education (eight years of secondary school). The period of study is from one to three years, depending on the vocation. The graduates of vocational-technical academies receive a certificate and an appropriate skill designation. The period of study in the secondary vocational-technical academies is from three to four years. Graduates receive a skill designation and a certificate of general secondary education.

Admission to technical academies is open to persons having a certificate of secondary education. The duration of study in these academies is no more than two years.

Thus, two types of vocational-technical educational institutions either give a secondary general education or admit only persons having such an education, which means that their graduates are entitled to go on to higher or secondary specialized educational institutions of the Soviet Union.

In many foreign countries, the training of skilled workers is done on the basis of the primary or the intermediate secondary school. There is a great variety of vocational-technical educational institutions. However, in the majority of countries there exists a group of vocational educational institutions which are assigned by the national educational agencies to the category of secondary educational institutions. The period of study in such institutions does not usually exceed that in the secondary general-education school. Some of them offer certificates which enable their holders to enter a higher educational institution of their country or even a university which offers instruction in the field in which they have specialized. The certificate of such institutions can be considered equivalent to the certificate of the secondary vocational-technical academies in the USSR. In all other cases, it is necessary to make a concrete analysis of such factors as admission requirements, the duration of study, and the mission the educational institution in question is called upon to fulfill.

Secondary specialized education is carried out in the USSR in tekhnikums, academies, and other educational institutions categorized as secondary specialized schools. Admission to secondary specialized schools is open to persons who have an intermediate secondary or a [complete] secondary education. The period of study in the first case is three to four years, and in the second case, two to three years. Students who enter a secondary specialized educational institution after eight years of study in a secondary school receive both a secondary general and a secondary specialized education.

Graduates are given a skill designation and a diploma. Students in technical and agricultural specializations also receive a skill designation in one of the workers' vocations.

As we have already pointed out above, foreign countries do not, as a rule, separate out secondary specialized education in their educational systems. However, as a first approximation, the majority of post-secondary educational institutions of the non-university type with a period of study of no less than two years can be put into that category. Their graduates already have a general secondary education, and two years of further study is quite sufficient for obtaining a secondary specialized education. The majority of these institutions are terminal. It is possible that in some cases the level of education of their graduates may be either lower or higher than that of the graduates of secondary specialized educational institutions in the Soviet Union. However, the task these institutions are called upon to perform is the same, namely, to train middle-level specialists.

Higher education in the USSR is carried out in universities, institutes, academies, and other educational institutions classified as higher educational institutions. Admission to institutions of higher education in the USSR is open to persons having a general secondary education. The period of study in these institutions in the USSR is five to six years. Graduates receive a skill designation in their specialization and a diploma. Practical work in enterprises related to one's specialization is an integral part of the educational process in the higher educational institutions of the USSR. Therefore, graduates of Soviet institutions of higher education can occupy appropriate positions without any additional training. Graduates of the institutions of higher education who show an inclination for scientific work may enter into graduate study. The period of graduate study in this case is three years, in the course of which students are supposed to pass three or four examinations and write a thesis as a result of their research work. Those who have successfully defended their theses are awarded the academic degree of candidate of science. The highest academic degree in the USSR is doctor of science, which is awarded to persons who have successfully defended a doctoral dissertation which represents a significant contribution to the development of science and technology. There is no limit on the period of time for writing a doctoral dissertation.

A characteristic feature of the system of education, and especially of higher education, in the developed capitalist countries is its elite nature. The decisions of the 32nd International Conference on Education (1970) declare that the possibility of receiving a higher education in the capitalist countries is restricted to certain classes and social groups; the document recognizes that children of the wealthy and ruling classes are 80 times more likely to be enrolled in a university than children of agricultural workers

and 40 times more than the children of industrial workers.[5] As was indicated earlier, the systems of higher education in the majority of capitalist countries are not homogeneous and include, on the one hand, privileged educational institutions of the university type, which open to their graduates broad prospects of scientific, social, and political activities and, on the other hand, various post-secondary educational institutions which prepare specialists for practical work in industry, agriculture, and other branches of the economy. In the Soviet Union, there is no such division. All higher educational institutions in the USSR -- and there are about 850 of them, including the universities -- give equal rights to their graduates. The diplomas given by all institutions of higher education have equal juridical force over the entire territory of the Soviet Union.

It makes sense, therefore, to compare the system of higher education in the USSR, in the first place, with the systems of university education or other equivalent education in the capitalist countries. Consideration must be given to the autonomy of many foreign universities, which allows them to establish their own educational standards by working out courses of study and by determining conditions for admission into the university and procedures for awarding the university's degrees and professional titles.

However, despite the diversity of organizational forms in university training, one common feature may be observed -- a cyclic pattern. As a rule, the entire program in higher education is divided into three cycles, completion of each of which leads to the award of a university degree or a professional title. The period of the first cycle is two to three years. In the process of their studies the students pass examinations, and they are awarded the university degree of bachelor (licentiate). The subsequent study cycles involve greater specialization and the introduction of the elements of scientific research. The second unversity degree, the master's is awarded after one to three years of additional study, the passing of appropriate examinations, and the defense of a diploma thesis, dissertation, or paper prepared under the direction of a scientific instructor. The next cycle leads to the award of the university degree of doctor (Ph.D.). The period of study for the doctorate is not less than three years. In the course of study, appropriate examinations are taken and a dissertation is prepared which presents the results of independent research.

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[5] Narodnoe obrazovanie (Public Education), Moscow, 1971, No. 2, p. 98.

It should be noted that in a number of countries -- for example, in many of the countries of Latin America -- higher education is divided into two cycles, upon the completion of which the degrees of licentiate and doctor are awarded. The period of study needed for obtaining the highest university degree is reduced accordingly.

Education in the universities of the majority of western countries continues to be academic in nature, more attention being paid to theoretical disciplines and less to applied ones. Therefore, the possession of a university degree facilitates but does not guarantee getting an appropriate position in industry or other fields of economic activity where practical skills are required. A university degree confers the possibility of continuing one's education for the purpose of receiving a still higher degree or professional title, of working as a teacher in institutions of higher education, or of being employed in research. All this is unquestionably different from the system of higher education in the USSR, which ensures equal opportunities for practical, teaching, or scientific activities. Therefore, within the limits of a formal analysis, it would be simplest to establish academic equivalence in terms of the total number of years of study and the conditions for obtaining a recognized professional skill that corresponds to the training received. On the basis of what has been said above, it may be concluded that, from the point of view of the educational system in the USSR, a master's degree with not less than five years of study can, in most cases, serve as evidence of having had a higher education. Persons having a bachelor's degree correspond, in many cases, to those with an incomplete higher education in the USSR and can be admitted to Soviet institutions of higher education for the purpose of completing their higher education. The degree of doctor (Ph.D.) may correspond to the candidate of science degree awarded in the USSR.

Thus, in our report we have attempted to synthesize in brief form all that has been accomplished by way of resolving the problem of equivalence. The problem, however, is still far from a complete solution. The formal approach is the first acceptable step, permitting the definition of groups of skills which are amenable to comparison. In the analysis of the system of education of the USSR and its comparison with foreign systems, we have, naturally, taken the educational system of our own country as the basis. This has allowed us to distinguish three main levels of education: vocational-technical, secondary specialized, and higher. The completion of each of these levels is certified by an appropriate document. The levels of training in other countries may occupy any intermediate position; however, in our opinion the term "secondary specialized education" cannot be used for the level between vocational-technical and secondary specialized, nor the term "higher education" for the level between secondary specialized and higher. In the first case, the level of training can be characterized as incomplete secondary specialized or vocational-technical, and in the second case, as incomplete higher or secondary specialized. We would like to

emphasize in this connection that from our point of view it is incorrect to apply the word "higher" to the various levels of education which, as we have already said, are typical in many countries. The very word "higher" implies a completed stage of education. What is possible further is only a process of improving the skills of the graduates of institutions of higher education, including the pursuit of academic degrees and titles. Therefore, one of the main disagreements which must be overcome in solving the problem of equivalence is the definition of levels and stages of education, or perhaps more correctly, of educational regions, within which a more detailed comparison might be possible. In this respect, the development of criteria for determining levels of education assumes great importance. The first attempt at a scientific approach to the selection of such criteria is the method devised by A. I. Bogomolov.

In our opinion, a detailed study of the content of education cannot be avoided. Clearly, there is no need to launch a broad campaign for comparing the content of education in all specializations in which training is conducted in, for example, the USSR and the U.S. However, in the more advanced areas of science and technology, in which specialists trained in these countries have gained repute, such a comparison would be useful. On an international scale, this would permit the creation of models of specialists of various kinds which would embody the positive experience accumulated by the systems of education in various countries, and this, in turn, would significantly facilitate a solution to the problem of equivalence.

SUMMARY OF THE DISCUSSIONS AT EDUCATIONAL TESTING SERVICE

PRINCETON, NEW JERSEY

March 15-17, 1976

Present during all or part of the discussions:

The members of the Soviet delegation
The members of the U.S. delegation
Jenne K. Britell, special assistant to the president, Educational Testing Service
Emily R. B. Eischen, associate examiner, Educational Testing Service
Marion G. Epstein, director of test development for College Board programs, Educational Testing Service
Miriam K. Levin, senior examiner, Educational Testing Service
Yale W. Richmond, director of the Office of East European Programs, Bureau of Educational and Cultural Affairs, U.S. Department of State
Robert J. Solomon, executive vice president, Educational Testing Service

March 15, Morning Session

After the welcoming remarks and the expressions of pleasure from both sides at the initiation of the seminar, there followed a discussion which revolved mainly around four questions raised by the Soviet participants.

What are likely to be the future trends in the number of college graduates in the U.S.? The consensus of the U.S. participants was that a number of contrary forces were at work and it was impossible to say what their net effect would be. On the one hand, currently depressed economic conditions had reduced the demand for college graduates and, correspondingly, the monetary advantage of the degree, and there was also imminent a decrease in the number of people in the conventional college-going age bracket. On the other hand, federal actions, particularly in lowering financial barriers, had broadened access to higher education; the spread of community colleges might make two years of post-secondary education quite commonplace; and more adults might attend college than had been the case in the past.

Is it a wise policy that--as was stated in the U.S. paper, "Guidance, Selection, and Access to Higher Education in the United States"--"it is usually the student who chooses the institution" rather than the institution that chooses the student? Should the institution not play an active part in selecting students, as is the practice in the Soviet Union? The responses from the U.S. side consisted largely of qualifications on the statement. It is true that institutions can select only from among students who apply, and that application is a voluntary act on the part of the student with little or no "pressure" from the institution. However, institutions communicate their requirements to prospective students and, by this as well as less formal means, convey to them some conception of the kind of students who are acceptable; and students, in turn, are likely to apply to those institutions where they think they could be accepted. Thus, institutions do influence applications, though it was also pointed out that there is a dearth of information for students that might help them make appropriate selections of institutions to apply to. For students from low-income families, the costs of college may also be a restraint on their choice. Nevertheless, in only a few institutions--though they are the best known and most prestigious--are there a great many more applicants than there are openings. Most institutions accept nearly everyone who applies, so in that sense it is the students, by their applications, who choose the institution they will attend.

Do institutions in the U.S. show any preference as between students who apply for admission immediately upon completion of secondary school and those who apply after having had some work experience? Has there been any research into which of these two types is ultimately more successful in their occupational careers? The vast majority of students enter higher education directly after secondary school. Among the reasons for this are that it is easier to plan enrollments when most of them come from the secondary schools; and that, while previous work experience or a combination of work and study may make better practitioners, many institutions --especially the large four-year institutions--are more interested in producing theoreticians than practitioners, and they believe that this is best done by "capturing" students immediately upon completion of their secondary studies. But reference was made to the "golden age" of higher education, just after World War II, when the college campuses were filled with veterans, who were highly motivated and mature and had more clearly defined goals. Recently, two study groups made up of prominent people have called attention to the educational advantages of having students work for a year or two before going on to college. However, the lack of jobs for young people makes it difficult for such a practice to become

widespread at the present time. Meanwhile, though, there are various programs which provide for a combination of work and study, and the proportion of students who work parttime while attending college is undoubtedly increasing. A reflection of this is that the average age at the time of receiving the bachelor's degree has risen from 22 to 25 or 26. The average age of students attending two-year community colleges is 26.

The Soviet participants were asked about the practices of higher educational institutions in their country on this same issue. The response was that students with work experience are given preference especially if they are applying for training in the same field in which they have had their experience. Such students generally do not do as well as other students in their first year, but subsequently, as they get into more specialized subjects, they surpass the students who entered directly after secondary school. There are special programs of preparatory studies for students entering a higher educational institution after having worked for a while. Furthermore, of the 4,600,000 students in higher education, about half are attending while still employed fulltime (bez otryva ot proizvodstva); they are enrolled in evening or correspondence courses or at one of the "higher technical educational institutions," which are attached to large enterprises and in which students alternate between theoretical studies and productive work. In some of the arts and the theoretical sciences, there is a preference for students who come directly from secondary school.

Is there any system for identifying gifted youth and enrolling them in higher education, such as there is in the Soviet Union especially in mathematics and physics? Reference was made to the National Merit Scholarship Corporation, devoted to ensuring that gifted young people have the financial resources to attend college; the Advanced Placement Program, which makes it possible for promising students to take college-level courses while still in secondary school; the large number of specialized scholarships supported by private grants to colleges and universities; and the National Science Foundation and the National Foundations for the Arts and Humanities, which make grants to outstanding students. The Soviet participants were asked about efforts to identify talent in the arts and humanities, and they replied that "talented youth are directed wherever they can best pursue their talents, whether this be in the sciences, the social sciences, or the humanities." Special schools were described, created by faculty members in various departments of higher educational institutions--sometimes by quite prominent professors--which attract outstanding students in their respective fields. In some cases the students for these schools are chosen in regional or national contests.

March 15, Afternoon Session

A question was raised about how the "extended method of selection" described in the Soviet paper is carried out in practice: what characteristics are measured and over how long a period of time, how a record of these measurements is accumulated, how the various characteristics are weighed against each other. Filippov, one of the co-authors of the paper, replied by referring to specialized schools, preparatory sections and courses, and scientific and technical societies for students, all operating in conjunction with the higher educational institutions.

> The scientific societies help students to develop basic research skills. Data show that students who have participated in the work of these societies acquire the study skills required in higher education much more rapidly [than those who have not participated]--or, as we say, they go through the "didactic adaptation" more easily.

As far as record-keeping is concerned, Filippov said:

> In our section of the Institute on Problems of Higher Education, research is currently being conducted on methods of characterizing personality, and for this purpose a questionnaire is being developed which is designed to be filled out over a number of years to show the level of motivation and the process by which that level is reached.

In the course of his remarks, Filippov used the terms deyatel'nost' and aktivnost', which were translated as "activity" and "activeness," respectively.[1] Efforts were made to clarify the distinction. The essence of Filippov's explication was as follows:

> "Activeness" is the position of a person who is striving to find his place in life, his role in the social structure, so that he may be optimally useful to society...A most important principle of our society is the many-sided development of the individual, the development of all his capabilities. It is a motto of our society that we demand "from each according to his capabilities." Therefore, the activeness of the individual is, on the one hand, a desirable and necessary condition for the development of his capabilities, and on the other, the realization of this capability in socially useful activity ...First, we must optimally organize the individual's environment, which would in turn stimulate him to change his

[1] The two terms were also used in the Soviet paper on selection and they have been translated in the same way there. -Ed.

> conduct. The organizational forms designed for the extended selection process should create this kind of environment, which would provide the most beneficial objective conditions for the growth of the individual's activeness. Of course, these conditions are not sufficient without appropriate didactic work in the school and family. But if, as a result of the appropriate pedagogical work and the creation of the objective conditions, we assure the participation of the individual in the activity toward which we are trying to direct him, and the individual begins to do something along those lines, then we can judge how active the individual's attitude has become.

Another question growing out of the Soviet paper concerned the role of "giftedness" in the selection process. Marland suggested that the Soviet selection process seemed to give greater emphasis to "giftedness" than was the case in the U.S.

> In the American system, at least at the high-school level, we are more concerned with the generality of a well-developed human being, as distinct from aptitudes for a given direction of professional development. We regard fulfillment of the human being, regardless of service to society, as being first and foremost, while the Soviet system seems to put primary emphasis on usefulness to society. This is not to say that we are unconcerned with the student's ultimate usefulness to society; that is a part of his fulfillment, but it is the fulfillment that is our first concern.

Kuznetsov, the other co-author of the Soviet paper on selection said that the Soviet method is not to "hunt for gifted people to the detriment of the normally able."

> There are two parallel lines. On the one hand, we believe that the gifted person is a treasure that belongs to society, and we want to foster talent in order to make it "common property," "common wealth." On the other hand, this does not prevent us from engaging in large-scale efforts to prepare all those who wish to enter colleges and universities.

An analogy was made between what was called "occupational orientation" in the Soviet paper and the newly emerging concept of "career education" in the U.S. It includes occupational counseling and learning about work and work roles. However, Soviet participants said that occupational orientation embraced a wider range of activities. Students consult with faculty members

in higher educational institutions even before they enroll. Institutions hold "Open Door" days, attended by students and parents and addressed by professors and deans. The process is intended to be a "didactic" one, in which the individual "plays an active part rather than merely being the object of action by others." As a result, "errors in guiding a student to an occupational choice" are rarely made; for example, Martynov said that in the Moscow Textile Institute, which he heads and which has an enrollment of 5,000 students, "we might have ten problem cases [a year], when a student says, after a year or two of study, 'I really don't care for this field.'"

A question was raised about the reconciliation of two qualities which were asserted in the Soviet paper to characterize selection processes in that country: the freedom of the individual to choose his occupation, and meeting the needs indicated by national manpower planning. As Bailey put it, "If 50 percent of Soviet young people want to be engineers, but manpower planning indicates a need for only 20 percent, how is this problem handled?" Kuznetsov replied as follows:

> Individual aspirations are a factor in our entire education system...There is a limit on this set by the needs of society, but I do not perceive any serious conflict between the two...If only 20 percent were needed, the task for our occupational guidance people would be to identify those 20 percent among the 50 percent who would do best as engineers, who would most readily master the skills and make the maximum contribution to society.

March 16, Morning Session

The discussion of the previous day, about the relationships between individual aspirations and the demand for manpower, was resumed. Glenny said that in the U.S., student enrollments in various fields do tend to follow change in employment prospects; while there are occasional oversupplies in some fields and shortages in others, they don't usually last too long. This has been accomplished without planning. Soviet participants emphasized that this approach was rejected in the U.S.S.R. Every graduate of a vuz is guaranteed a job in the field in which he or she has been trained. The annual number of admissions in each field is planned in advance according to the needs of the economy. Kuznetsov said:

> Not long before coming here, I had occasion to visit our Institute of Cinematography, which trains actors, directors, camera operators and other artists for the film. The vice rector of the Institute told me they had 30 applicants for

> every opening; especially for young women, the idea of becoming a film star is very attractive. Clearly, here is an area where planning is vital, so we do have certain quotas.

This provoked a question about students whose aspirations are frustrated by the manpower plan and its consequent quotas. If there are 30 applicants for every opening in a particular vuz, what happens to the 29 out of 30 applicants who are denied admission? Kuznetsov's response was:

> I think it would be better to tell a young person early, to make it easier for her to look for something else in life, than it would be for her to become a mediocre actress and perhaps be an unhappy person for life.

This was contrasted to the situation in the U.S., where people trained in a field in which demand had diminished might remain unemployed for some time. Smith pointed out, however, that there was not as "close a fit" in the U.S. as in the Soviet Union between education and employment; people trained in one field often work in others--for example, lawyers may not practice law but may work instead in business or government, where their legal training can be useful. She asked what "corrective mechanisms" would be used in the Soviet Union when the number of people needed in a given occupation turned out to be greater or less than what had been planned, but the question was not answered.

The seminar then turned to the papers on the meaning of the degree. Bailey made several observations to open the discussion. He questioned the Soviet characterization of U.S. higher education as being "elitist." That has been true historically, but is much less so today; about 40 percent of the relevant age cohort is now enrolled in higher education, and 40 percent is hardly an elite. In the 1960s, more than half of the recipients of baccalaureate degrees came from families where neither parent had graduated from college. He also argued against the trend, evident in both countries, toward a system of higher education which turned out either dilettantes or narrow specialists. "Most of the critical problems of the world cannot be solved" by either type of person. He continued:

> ...we have a double mandate: to increase markedly the standards of excellence that we impose on the general run of students--to get away from dilettantism--and at the same time to increase the capacity of our professional and disciplinary specialists to understand their relationships to the common good.

Most of the morning session was devoted to the matter of comparability of degrees. Bailey said that a major problem in making

judgments of comparability was that, in the U.S., and especially in the vocational-technical field, essentially the same skills and information can be learned, under the same standards of performance, in a secondary school, a community college, a proprietary school, and a trade-union apprenticeship. A further complication was the introduction of external degrees, in which people can get their education in half a dozen different kinds of learning environments, along with the development of "educational brokering services," which provide people with information and advice about the educational services they can use. Smith added yet another complexity: Much of higher education in the U.S. takes place in industry, either through individual companies like ITT or Xerox, or through trade associations, such as the American Banking Institute. The American Council on Education had established a process for determining equivalence between these courses and similar courses taught in colleges and universities, so that the latter will have some guidance in awarding credit. However, she pointed out that, since the U.S. bachelor's degree is not tightly related to any occupational purpose, the need to standardize degrees might not be so great. Spurr disagreed, on the ground that many employers used the bachelor's degree as a "first screening mechanism," regardless of its specific functional relevance. Also, some degrees were closely related to employment--e.g., in most states, a person cannot take the bar exam, and therefore cannot practice law, without having received a law degree; and even at the undergraduate level, a teaching certificate is usually part of the baccalaureate degree in education.

Kuznetsov made an analogy between the equivalence of degrees and the problem, "Where would it be better to lie in the sun--on a beach in Florida or on a beach in the Caucasus?"

> To answer this question, we might pose the following scientific problem: In which place is the intensity of the sunshine greater? How long would one have to lie on a beach in the Caucasus in order to receive the same amount of sun as on a beach in Florida?

More prosaically, he said that comparisons could be expressed in terms of three transfer points: (1) What level of pre-university education would a student have to reach in order to study in a vuz of the other country? (2) At what level in the educational system of one country would a student enter who has completed a given "cycle" of higher education in the other? (3) What are the employment opportunities in one country for a student who has earned a particular degree in the other? Spurr said that comparability between the two countries was probably closest between the degree of candidate of sciences in the U.S.S.R. and Ph. D. in the U.S. Kuznetsov added

that "it seems fairly obvious that the 12 years of secondary education in the U.S. are the equivalent of the 10-year secondary school in the Soviet Union, so here are two levels that can be agreed on fairly easily."

Bailey thought that comparison of degrees was feasible only insofar as higher education was job-oriented, and he questioned whether that orientation should continue to be dominant. Of the half-million hours of waking existence that a person will have who lives to the age of 80, fewer than 90,000 will be spent at work. Shouldn't higher education be concerned about the other 410,000 hours? But if higher education revolved around matters of personal or social style or culture, it's going to be very difficult to make any judgments about comparability.

There was agreement that the problem was fraught with difficulties, but several suggestions were made for approaches to it that might be fruitful. Kuznetsov spoke of the possibility of comparing content in the two systems of education; that would be a "difficult and prolonged task," but not impossible. It might even become the primary focus of further cooperation and exchanges. Turnbull asked whether it might be worthwhile to try to design a research project which might determine whether there was a basis for comparability. The sciences, mathematics, or foreign languages were put forward as the most promising fields in which to start such research. Another possibility was that the tests of the College-Level Examination Program, in those fields in which comparable work is offered in the Soviet vuzes, could be translated into Russian, to see how Soviet students performed on them in comparison with the norms that have been determined for the tests in the U.S. Still another suggestion was that comparisons might be made in terms of credit units, since these were so widely used in U.S. higher education, but the Soviet participants said there were no similar sorts of units in their country. No effort was made to reach agreement on an approach at this time. Indeed, Turnbull pointed out that the individuals who would eventually do the work would have to be given freedom to choose the approach that they believed to be best.

At the conclusion of the morning session, Kuznetsov said he thought that the discussion had been carried about as far as was useful. He asked that some time be spent in taking "a closer and more detailed look at the tests that ETS makes and the methods of preparing them. This is unexplored territory to us, and Professor Filippov has the responsibility of making a presentation on this subject upon our return." Turnbull agreed to arrange presentations on this topic.

March 16, Afternoon Session

Turnbull briefly recounted the history of ETS. It was founded in 1947 by three agencies that had been engaged in testing and "believed that the time had come to put their resources together to provide professional management of a testing program and in particular to undertake a strong program of research aimed at continuous improvement of testing." Since that time, its research program has been broadened considerably, and it has established offices in several cities around the U.S. Its relationship to the College Entrance Examination Board, one of the founding agencies, is as a "professional and administrative agency that serves under the Board's direction to carry out the testing programs that are a part of the Board's purpose." ETS has similar relationships to other policy groups for other testing programs. The College Board, Marland noted, was an association of vuzes, high schools, and professional organizations--about 2300 members altogether.

In developing a test, ETS typically works with a committee of six or seven people, secondary-school and college teachers of the subject matter of the test; where tests concern the professional fields, practitioners are also included. They determine specific test objectives, and then, together with ETS staff members who are also trained in the subject matter of the test, they prepare a great many questions related to these objectives. The ETS staff role is to ensure that the questions ultimately used are sound in terms of measurement techniques. The questions are tried out with students and may be rejected or changed as a result. Several different forms of a test are usually prepared at the same time, and then their scores are equated, so that if a student gets a score of, say, 500 on one form, that student would also have received a score of 500, within fluctuations of random error, on any other form of the test then in use. Scores are expressed on a scale that runs from a low of 200 to a high of 800; these numbers were deliberately chosen to make it clear that they do not represent a percentage of anything. ETS does not set a passing or failing score; it is up to each institution that uses the test to decide what scores are adequate for its purposes. The entire process of test development takes about three years. About 100 professional staff people and 2000-2500 school and college teachers and professionals are involved in the preparation of ETS examinations.

In response to a Soviet question, Turnbull said that the test specifications and the test questions were continually being reviewed and revised. However, a good question might be used for three or four successive years. Consequently, neither presently active nor past forms of the tests are published. Persons who have a teaching or other proper interest in the tests are permitted to examine them, and sample questions are published for students and others who want

to have an idea about the kinds of questions that are on the tests. A Soviet participant asked how the secrecy of the test could be reconciled with the fact that each institution is supposed to determine its own standards. How can the institutions do that unless they know the content of the test? Turnbull replied that vuzes in the U.S. are quite familiar with the general nature of the test; only the specific questions are secret. Marland added that people in the vuzes trust the examinations because they know that their colleagues are participating in constructing them and because the vuzes themselves help set test policies by their membership in the College Board.

Each ETS test is given several times during the year. The student who wants to take a test applies to ETS and specifies the date on which he or she wants to take it. ETS arranges for the establishment of testing centers all over the country, and the student is assigned to one of these centers, usually one close enough to his or her home so that no student has to travel more than a few miles. These centers are usually at a school or vuz; ETS arranges with a responsible person there to be a test supervisor and the supervisor in turn hires several assistants. They make sure the test is given under proper conditions and they return the tests and the answer sheets to ETS. Last year, ETS engaged the services of 55,000 people to give tests at about 3000 centers.

ETS scores the tests and reports the scores to the students, to their high school, and to the vuzes to which the student asks his scores to be sent. Typically, a student will have his scores sent to three institutions--perhaps one that is highly selective, one that is quite unselective, and one in the middle.

Filippov asked whether taking the test was entirely voluntary. The answer, given by various U.S. participants, was a qualified "yes." Many vuzes require their applicants to take the Scholastic Aptitude Test(SAT, the main test administered by ETS for the College Board), so a student applying to such a vuz will have to take that test--but of course he does not have to apply to vuzes which require the SAT. However, all law schools in the U.S. are members of the Association of American Law Schools, whose Law School Admissions Council requires all applicants to take the Law School Admissions Test (which is also administered by ETS). Except for such limitations, taking the test is entirely voluntary. Many students take the SAT several times, often because they hope to improve their scores, but statistically, their chances of large improvements are not great.

Kuznetsov asked how many different tests a student would take. Aside from taking the SAT more than once, students may also take

the Preliminary SAT, usually in their junior year in high school, as a way of familiarizing themselves with the test and getting an estimate of their abilities for college-level study. As part of their college application, they may also take one or more achievement tests in specific subjects, such as physics or European history; these are also administered by ETS for the College Board. However, Feldmesser pointed out a difference in the way achievement tests are used in the higher educational systems of the two countries. In the Soviet Union, a student is required to take examinations in certain specified subjects, depending on the field to which he is applying; in the U.S., students decide which achievement tests they want to take, depending mostly on what they think they can get the best scores in. Finally, there is an entirely separate organization, the American College Testing Program (ACT), and some vuzes require its tests rather than those of ETS, or they may offer students a choice. ACT is located in Iowa and is younger than ETS. Some students may take both. Finally, some states, like New York, administer their own examinations to high-school seniors.

Filippov asked about data on the relationship between students' test scores and their later academic accomplishments. Turnbull said this relationship was being studied constantly. He noted that most vuzes do not rely solely on test scores in forming judgments about students' academic promise. They also use the students' previous academic record, in high school or at another vuz, as well as recommendations from teachers or sometimes interviews with the student; these latter devices are especially important in making judgments about student motivation, something we have not been able to do with a "test." Typically, the correlation between a student's previous academic record and a measure of later academic success (such as grades in college) is about .5; the correlation between the test score and the measure of success is about .45; and the correlation of previous record and test score combined with the measure of success is about .6. However, when a vuz admits only the most highly qualified among its applicants, their test scores do not vary much, and so there cannot be a very high correlation between the scores and later performance.

March 17, Morning Session

Epstein began a presentation on test construction by pointing out the main differences between an aptitude and an achievement test: The former is a measure of developed abilities acquired over a long period of time both inside and outside the classroom; the latter deals with knowledge that is more closely tied to specific

courses that students have had in school. You cannot tell the difference by looking at the questions, because the same question can be used in either type, but an aptitude test will have more questions that ask for the application of elementary concepts to unfamiliar situations, whereas an achievement test will have more questions about the kinds of things that have been taught in class.

The character of a test is determined above all by its purpose, which is expressed in a set of specifications. These specifications, drawn up by a committee of high-school and college teachers, identify the topics to be covered and the kinds of knowledge and skill to be tested, such as recall of facts, comprehension of concepts, perception of relationships, or analysis or synthesis. Thus, the specifications for a test of American history would show how many questions there are to be on each time period; how many on political institutions and principles, economics, foreign affairs, and social movements; and how many will ask for recall, interpretation of reading passages, interpretation of maps and cartoons, and so on. All of this is displayed in a matrix which would show, for example, that there were to be 12 questions on political institutions that test perception of relationships; three on foreign affairs that require the interpretation of maps or graphs, etc. In addition, the specifications set a difficulty level; in college-admissions tests, where the purpose is to get good discrimination among students in all parts of the range, the specifications usually call for a test on which the average student will answer between 50 and 60 percent of the questions correctly.

Questions are then written to meet these specifications, and the questions are pretested with students who are as similar as possible to those who will be taking the test. An item analysis is done on the pretest responses, to find out what percentage of students answered each question correctly and also how many students at each ability level selected each of the incorrect answers. One of the advantages of multiple-choice questions is that they can be analyzed in this way. Writing the incorrect answers is just as important as writing the correct answers. For example, it is important that the incorrect answers not be written in such a way as to indicate that they are wrong; and in mathematics, it is important to include the incorrect answers that would be reached by students using typical wrong ways of getting an answer. Since most of the teachers and others who write items for ETS have not had experience with this kind of test, ETS has developed a manual for them which describes their responsibilities, gives information about preparing multiple-choice questions and about security procedures, explains equating and scaling, etc. [Each of the Soviet participants was given a copy of this mannual, and of the student bulletin for the SAT, which includes sample questions.-Ed.]

After the test questions have been assembled, at least three teachers must take it and agree on all the answers.

The Soviet participants asked several questions:

How do you guarantee that different forms of the same test are at the same level of difficulty? This cannot be absolutely "guaranteed," but there are several good methods for approaching it. The most important is to include in each test several questions that have been used previously, and then to compare the proportion of students answering them correctly with the proportion who answered them correctly in the past. These are called "equating questions."

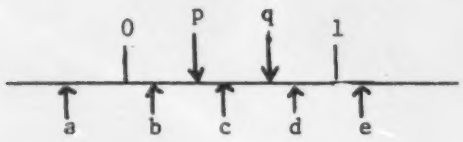
Is consideration given to the amount of time it takes for the student to complete a test? It is assumed that a student who works quickly and accurately is a little better than the student who works just as accurately but more slowly. Consequently, most ETS tests are technically "timed"; they are of such length and difficulty that about 80 percent of the students who take them can complete them in the time allowed. In many tests, a correction is used for guessing; for example, if there are five answers to choose from, the score may be the number of correct answers minus one-fourth the number of wrong answers, so that the score of the student who simply marked answers at random would be zero rather than 20 percent correct.

How do you prevent a student from sending someone else in his place who might get a better score? Students must register for a test ahead of time, and they are sent a ticket of admission which they must show when they arrive at the testing center. The test supervisors are usually teachers and guidance counselors from the schools where the testing centers are located, so they usually know the students. Of course, this is not a 100 percent guarantee that the student taking the test is the one who is supposed to. Turnbull added that, if a student takes a test twice and gets very different scores, an investigation is made, and sometimes it is discovered that the handwriting on the two answer sheets is quite different. However, ETS studies indicate that the proportion of individuals who are impersonated at test administrations is a fraction of one percent.

Are all tests given in the U.S. of the multiple-choice type? Probably 90 percent of the tests that teachers use in the classroom are of an essay type, in which the student must compose the answers. However, in nationally administered examinations, where the interest is in making fairly precise comparisons among the performances of

perhaps several hundred thousand students, multiple-choice questions are used much more frequently, because they can be scored so efficiently. ETS does not have a monopoly on the use of multiple-choice questions; many other organizations use them. They are sometimes used in college classes, too, where there may be 1000 or 2000 students enrolled. Teachers may also buy multiple-choice tests, published by ETS and other organizations, for use in their classrooms, so that they can compare the level of their students' knowledge with that of students elsewhere. A great deal of research has been done on the effectiveness of multiple-choice tests, and the evidence is quite clear that the results of these tests correspond very closely to the results on essay tests. It is not true, as is often thought, that a multiple-choice test can deal only with the recall of facts. For example, here is a question that calls for considerable understanding and thought:

> Which of the arrows on the diagram below point(s) to a place on the number line that could be the product of p and q?



In order to answer this question correctly, the student must realize that, since p and q lay between zero and one, they were both less than one and consequently their product would be not only less than one but also less than either p or q.

How do you assure the accuracy of the scores in large-scale testing? How can a student be sure that the score he receives is the score of the test that he actually completed? That has always been a difficult problem, though processing equipment developed in recent years has proved to be very reliable. At ETS, a certain proportion of the machine-processed material is checked by hand; in most cases, where there is a difference between the machine's score and the clerk's score, it usually turns out that the machine was right. Students sometimes write in and ask that their tests be re-scored, and that will be done.

SUMMARY OF THE DISCUSSIONS AT EDUCATIONAL TESTING SERVICE

BERKELEY, CALIFORNIA

March 22-23, 1976

Present during all or part of the discussion:

The members of the Soviet delegation
William Anderson, professor of classics and chairman of the executive committee of the College of Letters and Sciences, University of California at Berkeley
Robert L. Bailey, director of the Office of Admissions and Records, University of California at Berkeley
Frederick E. Balderston, professor of business administration and director of the Center for Research in Management Science, University of California at Berkeley
Sanford S. Elberg, dean of the Graduate Division, University of California at Berkeley
Robert A. Feldmesser, senior research sociologist, Educational Testing Service
Lyle Gainsley, registrar and director of admissions, University of California
Lyman A. Glenny, director of the Center for Research and Development in Higher Education, University of California at Berkeley
T. R. McConnell, professor of higher education, University of California at Berkeley
William Nestrick, associate dean of the College of Letters and Sciences, University of California at Berkeley
Norvel L. Smith, associate vice chancellor for student affairs, University of California at Berkeley
Verne Stadtman, associate director, Carnegie Council on Policy Studies in Higher Education
Donald C. Swain, vice president for academic affairs, University of California
Nancy Tapper, president, Peralta College for Nontraditional Studies
Jonathan R. Warren, research psychologist, Educational Testing Service (Western Regional Office)
Melvin Weber, director of the Institute of Urban and Regional Development, University of California at Berkeley

March 22 Session

Several U.S. participants contributed to a description of the higher educational system in California. It consists of four parts:

(1) The University of California (UC) system, which is charged with offering an undergraduate education to the upper 12.5 percent of high-school graduates in the state and with conducting graduate-level and most professional-school education and the largest share of research. It has about 120,000 students at nine campuses. Eight of these--at Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, Santa Barbara, and Santa Cruz--are "general" campuses, with a broad spectrum of programs and students; the ninth, at San Francisco, is devoted to the health sciences, with schools of medicine, dentistry, nursing, and pharmacy. All of these campuses have certain policies and standards in common--for example, concerning admissions and faculty appointment, review, and promotion. But each one also has a distinctive character. Berkeley is the oldest campus of the system and the most renowned, with a distinguished faculty and a highly select student body. Los Angeles is a little larger than Berkeley and is attaining increasing distinction in its achievements. Davis is the primary agricultural campus and has a tradition of service to agriculture. The other campuses are newer, most of them dating from around 1960 or later.

(2) The State University and College System (SUCS), which offers bachelor's and master's degree programs to the upper one-third of high-school graduates. About 350,000 students are enrolled on its 19 campuses.

(3) The community college system, which offers the first two years of undergraduate education, much of the vocational higher education, and leisure and adult education. There are more than 100 institutions in this system, with about 300,000 fulltime and 300,000 parttime students. Anyone with a high-school diploma or its equivalent, or any resident who has reached the age of 18, can attend these colleges.

(4) Private institutions, which exist at all three of these levels.

The charge to UC to serve the upper 12.5 percent of high-school graduates means that about 35,000 students are eligible for admission each year. Many of them go to private or out-of-state institutions or to SUCS or the community colleges. Each year, UC admits about 17,000 freshmen; the number is determined in negotiations between UC and the State Department of Finance. The freshmen enrollments are allocated among the nine campuses. UC defines requirements for admission in terms of subject-matter preparation, high-school grades, and scores on the SAT and three achievement tests. Also, four percent of admissions are reserved

for minority and disadvantaged students, and about 12,000 students enter each year as transfers from other vuzes, mostly California's community colleges.

Students may apply to only one UC campus, though they may also apply to one SUCS campus and one community college and to private institutions as well--and many students do. They themselves decide which campuses they wish to apply to. Students denied admission at one unit because of the limitation on the number of enrollments there are asked if they would like to have their application sent to another unit in the same system.

Total costs of attending one of the UC institutions range from $3500 to $5000 a year. For residents, the tuition fee is $650; for non-residents it is $1500 and is going up to $1900 next year. (Non-residents are subject to higher admission requirements as well.) The fee structure in the SUCS system is about half that. The rest of the expenses are for room and board and other living expenses, for books, etc., and the range reflects differences in the cost of living in the communities where the campuses are located. The community colleges have no tuition and, for applicants with a high-school diploma, no residence requirement.

More than 95 percent of UC students are California residents, and many who are not are foreign students. Slightly more than half are female, and about five percent are black, about six percent Mexican-American, ten percent Asian, and less than one percent native American. A very high proportion are in middle - and upper-income groups. At the Berkeley campus, average family income for freshmen entering in the fall of 1975 was $21,700, which is probably in the upper third of the income distribution for the state as a whole. However, about 20 percent of the class came from families with less than $12,000 income. About 60 percent were male. The mean high-school grade-point average was 3.6; the mean SAT-Verbal score was 513, and SAT-Mathematical, 592. The proportions of minorities are about the same in Berkeley as for the system as a whole, which is to say that they are significantly under-represented. An exception are Asians, primarily Chinese and Japanese, who are about three percent of high-school seniors and 15 percent of undergraduates at Berkeley. Efforts are being made to increase the proportions of Mexican-American and black students among the undergraduates.

The questions asked by the Soviet participants, and the U.S. responses, were as follows:

What are the correlations between SAT scores and high-school grades, on the one hand, and grades in the first year of college, on the other? High-school grades have been the best single predictor, with a correlation of about .45. Adding SAT and achievement-test scores brings it up to about .50. There is some variation among the campuses.

If high-school grades are the best predictor, and SAT scores improve the prediction only slightly, how can the enormous effort that goes into the SAT be justified? Test scores and high-school grades are considered as alternate paths for admission. Some students qualify only because of their test scores; others qualify only because of their grades; still others need both.

Is the curriculum at the community colleges different for those who intend to go on to a four-year college and those who are receiving vocational training? If so, does the student then have to decide, at the time he enters, which of these curricula he wants to pursue? Isn't there some concern that students who transfer to a UC campus from a community college won't be as well prepared as those who start at a UC campus? The curricula are different. The student has to choose between them somewhere along the line, but the decision is not irrevocable. The community colleges are oriented mainly toward the university. Not many of them have comprehensive occupational programs, and about three-quarters of the students entering the California community colleges say they intend to go on to a four-year institution, though far fewer than that actually do go on. There are problems of articulation between the community college and the university, and often there are difficulties in the first quarter or two after transfer. For a while, a higher grade-point average was required of students transferring from community colleges than was required for lower-division UC students to move into the upper division--2.4 as against 2.0, on a 4-point scale--the rationale being that preparation at the community colleges was less rigorous. Several years ago the transfer requirement was reduced, and it does appear that community-college transfers do not do as well at first in grades, though there are other things to consider such as retention and choice of major. Ultimately, however, most students who come to the university as transfers do just as well as those who started at the university. It should be remembered that students do not have to choose a major until their third year. Also, courses such as Introductory Physics are supposed to be the same in all California vuzes. The impression should not be conveyed that the community-college programs are second-rate. In the sciences particularly, they tend to be very strong. The typical community-college instructor has at least a master's degree and

five or ten years of experience; classes are somewhat smaller than at the university campuses, and the physical facilities and teaching equipment are extremely good. Furthermore, many community-college students are eligible for UC but choose to attend a community college instead for financial, locational, or other reasons; such students would have no difficulty making the transfer.

What are some of the community-college programs not aimed at transfer to a four-year institution? Nursing, data processing, training for carpenters and electricians--a cross-section of traditional vocational programs and the newer technical programs in such fields as plastics. In rural areas there would be programs in agriculture and forestry. A college would have perhaps 20 or 25 programs, day and evening.

What kinds of jobs do students obtain upon completing a two-year college? Most graduates of these institutions would be at a technical or paraprofessional level. Because of the presently tight economy, the market for these graduates is not as good as it used to be. But in some fields, like data processing or nursing, a student is still able to choose among two or three jobs. A graduate in data processing would usually begin work as a low-level programmer but with an opportunity to enter a developmental program in a large firm. Many employers, both public and private, have their own training programs. Very few occupational training programs in the community colleges are specific to the licensing requirements of a profession, though nursing is one exception. In some vocational programs, like fire science and police science, the technical requirements can be completed in a community college, but advancement in the job would demand more general study at a four-year institution, and many people in those fields will meet that requirement after they start to work.

How do you go about increasing the proportions of minority students? Faculty, students, and other representatives of the university go out to the high schools and community colleges that have heavy concentrations of minority students. Financial-aid programs concentrate on minority students. Efforts are made to have the faculty and staff be representative of the population, too, so that they can serve as role models for minority students. When minority students are on campus, there are follow-up programs to encourage them to stay until they receive their degree.

Why do residents of other states have to pay higher tuition than residents of California? "That's not very hospitable." The California system of higher education is supported by taxes paid by the residents of California, so first preference is given to

those who live in the state. Those who come from other states are expected to pay more than those who have already been paying taxes over the years. As far as admissions criteria are concerned, there are more applicants than openings, so the residence requirement is one way of selecting. But the university is interested in having the best students and a diversity of them, so it does permit a certain percentage of non-residents. These arrangements are not unique to California but are generally true for public institutions all across the country.

What is the practical meaning of a university with 120,000 students? What are the advantages of such a system? What sense is there in putting 120,000 students under a single administration? The California system is one in which any high-school graduate can study and can gain access to the very best in public education. That is something held to be very important in the state. The role and function of the UC system can't be compared to that of a small, selective, private institution like Harvard or Princeton. Its obligations are such that it must be prepared to accommodate a larger number of students. That's a matter of educational philosophy. On the other hand, there is the question of the size that a vuz has to be in order to have effective educational programs. In UC, the policy has been to limit the size of each campus to a maximum determined in accordance with the physical structure of the campus and its span of programs. Berkeley, for example, has about 20,000 undergraduates and 9,000 graduate students. It must also be borne in mind that each of the nine campuses of UC enjoys a considerable degree of autonomy.

March 23 Session

The opening topic was the meaning of the degree. Students of UC at Berkeley must earn 180 credits to be eligible for the degree. UC is on a quarter system, each quarter being ten weeks of classes followed by one week of examinations. A student is normally in attendance for three quarters each year and earns about 15 credits each quarter--by taking three five-credit courses, or four four-credit courses, or some such combination--and so at the end of four years he would have 180 credits. Most of these credits have to be in courses recognized as appropriate to the general area of the degree--for example, in letters and sciences. Most students also specialize in a particular field, and their department of specialization will have additional requirements; some departments may require as few as 50 credits in the field of specialization, while others, especially in the sciences, may require as many as 100. These departmental requirements have to be approved by the College's executive committee; technically, no department is supposed to require more than 90 credits, but some departments have been allowed to exceed that because of the need to satisfy preliminary requirements in the scientific fields.

A Soviet participant asked what a "credit" represented. The response was that between one and two credits were awarded for each hour per week that the student is supposed to spend in the classroom. Most courses met three hours a week and so were given four or five credits. It was assumed that a student spent, on the average, about two hours of preparation outside of class for each hour in the classroom, but any student who meets the requirements of the course, receiving passing grades on tests and papers, will receive the number of credits assigned to the course. How much time a student actually devotes to a course outside the classroom varies with the student and with the professor. Some professors make assignments that would take an average student four hours for every class hour, while other professors don't make any assignments at all. This led a Soviet participant to ask if there was any way of regulating these assignments, for otherwise a situation might arise "in which professors assigned so much work that even the ablest of students could not cope with it." That was admitted to be a possibility. However, it was pointed out that most institutions permit a student to receive a grade of "incomplete" for a course, which meant that the student had a certain amount of additional time in which to complete the work for a course; if he did complete it within that time, he would receive a regular grade and then he would also receive credit for the course. Also, students who find they have too heavy a workload have the option of withdrawing from one or more courses.

Tapper explained that some vuzes, such as the college of which she was president, in the last decade developed an entirely different system for awarding the degree. A program is designed for each individual student, based on that student's educational objectives and previous background. The program is organized not in terms of credits or hours in the classroom but in terms of actual learning outcomes. Students may take courses, but they may also learn by independent study or by work experience; many of these students are adults and they have already learned much of what they need and are seeking to have that learning legitimated, and perhaps they want to add a theoretical structure to it. This kind of education is called "nontraditional study." Tapper concluded by asking whether anything similar existed in the Soviet Union.

Kuznetsov and Vorob'yev responded. Recognition of the special problems of teaching adults has emerged only recently in the Soviet Union. One method that is becoming established is that of independent study. Instead of saying that a student prepares two hours for one hour of lecture, it could just as well be said that the lecture is the preparation for the learner's independent activity. This has certain implications for the instructor's behavior. Another method is the use of technological means of instruction, especially audiovisual aids. Not everyone in the Soviet vuzes has accepted the need for effective use of technological aids--or, as Minister of Higher Education Yelyutin has expressed it, the "industrialization of higher education." Another tendency

worth mentioning is the "humanization" of the education of engineers. The rapid growth of information in the scientific and technological disciplines has crowded out the "humanitarian" aspects of education in those disciplines; all that is left is the social sciences, foreign languages, and a few electives. But the contemporary engineer must be a person of intellectual breadth. The "humanization" of engineering education proceeds along two lines: the inclusion in the engineering curriculum of disciplines such as psychology, esthetics, and art history; and the infusion of the core disciplines of engineering training itself with humanitarian aspects. For each of approximately 400 specializations in higher education, a "typical study plan" has been developed, in which the areas of knowledge necessary for that specialization are spelled out. Parallel to them is a widespread practice of training specialists by "individualized study plans." But even the typical study plans are not dogmas; they can be adapted to the needs created by the national economy, and their content is reviewed periodically. Soviet higher education makes wide use of computer technology. All students are required to use computers in their practical and laboratory projects.

Soviet higher education has long given great attention to extramural education; of the 4,600,000 students in higher education, about half are studying in the extramural system, while continuing fulltime employment. The number of students in this system is expected to remain about the same, but the future expansion of higher education will take place principally in the fulltime form, so that the proportion of students in the latter will increase to about 60 or 70 percent. Until recently, the function of extramural education was basically the preparation of specialists for the economy, but the function is changing now more toward satisfaction of the cultural needs of the people. For example, the deputy director of Moscow State University told in a recent personal conversation of a taxi driver who had enrolled in the extramural program of the university's Department of Philosophy--not because he wanted to become a philosopher, but because he had a lot of free time and "he decided he wanted to use it studying philosophy."

Warren raised the issue of the quality of learning: Are 180 credits equivalent to any other 180 credits? Are the results of learning in nontraditional settings the equivalent of the learning that takes place in traditional classrooms? A related question, Kuznetsov added, is whether the degrees awarded by all institutions are equivalent; this is a problem in the Soviet Union as well. Weber said it was difficult to imagine a criterion of equivalency other than the student's fulltime commitment to his studies for a specified period of time; otherwise, degrees even in different fields, such as music and mathematics, would be incommensurable.

Kuznetsov suggested that another approach would be to ensure that highly skilled faculty members are evenly distributed among all institutions. Tapper pointed out that two students can go through the same experience and learn different things; the really important question was whether the educational system allowed each person to learn as much as he or she could. Glenny said that the accreditation process prevented institutions from being drastically different from each other in the value or content of their degrees. Accreditation is performed by private regional associations of colleges and universities. Those that are already accredited review institutions that are not, to see if they should be, and every institution is reviewed periodically. The accreditation review is guided by a set of standards--number of books in the library, qualifications of the faculty, etc. It doesn't guarantee that all degrees will be the same, and the range of quality is still very great, but it does establish a floor, and in that sense degrees do have some amount of equivalency.

SUMMARY OF THE DISCUSSIONS AT EDUCATIONAL TESTING SERVICE

ATLANTA, GEORGIA

April 1-2, 1976

Present during all or part of the discussion:

The members of the Soviet delegation
The members of the U.S. delegation
Scarvia B. Anderson, vice president and director of the Southern Regional Office, Educational Testing Service
Jenne K. Britell, special assistant to the president, Educational Testing Service

April 1 Session

On behalf of the Soviet participants, Kuznetsov expressed satisfaction with the visit to U.S. vuzes.

> The program was interesting, and we were received warmly everywhere....We were told everything we wanted to know, shown everything we wanted to see, and given a great volume of literature....Our only regret was that we didn't have time to see as much as we would have liked.

Asked if there had been any observations that "puzzled" the visitors, he replied that there had not been, and none of the other Soviet participants mentioned any.

Most of the discussion that followed was concerned with two topics. The first revolved around the interrelated issues of the selection, placement, counseling, and "occupational orientation" of students. This had been designated as one of the subjects of the seminar and had been talked about at the first session in Princeton but was now explored in the light of what the Soviet participants had found during their visits. The other had to do with the breadth of opportunity for higher education provided by society, and with the related concepts of freedom of choice for students and a "second chance" to obtain higher education.

With respect to the first of these topics, the Soviet participants said the system of selection impressed them as being highly efficient. In particular, the construction and use of tests stood at a high level, and the centralized processing and accumulation

of test scores should provide a good research base. However, these tests were essentially measures of verbal ability and were not adequate to the needs of counseling or of occupational self-determination. They were not sufficiently predictive of success in learning, and there was no evidence of their effectiveness in predicting occupational success; they relied entirely upon quantitative evaluation of large numbers of people, which could not be sufficient because it missed what was unique to the individual personality; and they did not provide for "didactic opportunities," in which the individual could try out his abilities and potentials in action and draw conclusions about himself. It would be better if these statistical methods were combined with the methods of extended selection described in the Soviet paper. Perhaps the way in which guidance counselors functioned, in both secondary schools and vuzes, was the beginning of such a combination.

The U.S. participants acknowledged that there was much validity in these criticisms of testing for selection, but they also offered some explanations and qualifications. At institutions where there are many more applicants than openings, it is very tempting to be able to eliminate a large number of applicants in a routine way, simply on the basis of a number, before taking a closer look at the rest. But probably not more than five percent of U.S. vuzes are in that situation today; at the others, where the problem is not to find ways of excluding students but to search for the special talent that would be accommodated by a particular institution, there is a healthy re-emphasis on the qualitative aspects of applicants. On the other hand, the enactment of privacy laws may be having the opposite effect. These laws say that a student may look at an institution's file on him and challenge any document in that file. It is possible, for example, that if a student believes he was denied admission to a vuz because of a letter of recommendation, he may be able to take legal action against the person who wrote the letter. This may mean that people who write such letters will say only favorable things, and admissions officers may therefore come to pay no attention to the letters and turn to test scores instead. Another possibility, though, is that the vuzes will go directly to the high schools for information about students, thus moving more toward Soviet procedures for early identification of promising students. Meanwhile, test publishers and sponsors, such as ETS and the College Board, do make considerable efforts to train counselors in the proper use of test-score statistics--through workshops, seminars, lectures, and publications--and to reduce excessive dependence on the scores.

Several U.S. participants stressed the undeveloped state of measurement of personality and motivation. There are some widely

used tests, but they depend heavily on students' self-reports and thus work best when the student is relaxed and in a counseling situation rather than in a situation where the information he provides may be used for selection purposes; in the latter case, the student's self-report may be distorted, and many people would regard it as unethical even to put the student in a situation where he has to testify about his own characteristics. Other kinds of techniques, such as the Rorschach, do not seem to offer sufficient promise to persuade educators to use them. But there are ways of studying personality other than with tests. The school record, showing the grades earned over many years and what improvements have taken place, is a reflection of the student's motivation. The best technique is still that of observing the individual carefully in his ordinary activities over a long period of time--the kind of technique described in the Soviet paper and discussed by the Soviet participants. There seems to be increasing emphasis in both countries on the importance of having the individual study and understand his own personality, so that there can truly be a self-determination of the things he will do later in life.

Filippov commented that important differences between the higher educational systems of the two countries were connected to the fact that, in the Soviet Union, a student applies for and is admitted to a department for study in a special field, whereas in the U.S., a student enters a vuz in general and does not select a specialization until after two years of general studies. Thus, it is more important in the Soviet system that the student's occupational orientation begin before entrance into higher education. He pointed to the existence of extramural "enrichment" schools for secondary-school students; these have been organized by various universities to help students learn about their capabilities for advanced mathematical work, for example, by means of correspondence material and consultation with university scholars. Other schools of this kind are more directly connected with a specific occupation, such as the "forest academy" founded by the Forest Technology Institute in Petrozavodsk. Scientific societies sponsor contests for secondary-school students. These methods "strengthen the elements of activeness of the individual in the process of occupational self-determination." Marland reminded seminar participants about "career education" in the U.S., which focuses, beginning in elementary school, upon helping young people make self-determined decisions, leading toward occupational choices, based upon knowledge and sensitive counseling. According to a recent survey, more than 50 percent of U.S. school systems are engaged in career education. One problem with it in the U.S. scheme of things, however, is that it is insufficiently grounded in longterm planning or information about national manpower needs. It was also pointed out that while diagnosis and placement are not

part of the selection process in the U.S., they do take place after the student has been admitted to a vuz. References were made to computerized systems developed independently at the Ontario Institute for Studies in Education and at Miami-Dade Community College; in both places, students already enrolled in college are enabled to identify their deficiencies in mathematics and other subjects and then are given access through the computer to self-instructional programs to help them overcome their deficiencies.

The discussion of the breadth of opportunity for higher education was launched by Bailey's comment that the segments of the American educational system are separated by "very permeable membranes." There are many different routes for getting into college, and no clearcut set of standards that first had to be passed. Age barriers are falling. Much of the movement through the system is a matter of "personal whim"--people dropping in or dropping out as they wished. Overall, the system is the combined result of historical accidents; of some conscious state and federal policies, especially those aimed at making higher education available to all who could benefit from it without regard to background or income; and the effects of a "post-industrial society," which emphasizes services and the quality of existence rather than industrial production.

Soviet participants pointed to the mechanisms for providing broad access to higher education in their country. There are 4,825 tekhnikums, specialized post-secondary schools with two- and three-year courses of study. More than 2,500,000 people are studying in the system of extramural higher education. There is a network of People's Universities, open to all without regard to previous level of education; they award not degrees but certificates, in virtually any field of specialization. Students who have completed a specialized secondary school can receive a degree from a vuz in a shorter than usual period of time if they study the same specialty there. Another device that is being considered, though it has not yet been adopted, is to break up the period of higher education into two or three cycles and permit a student to complete just one cycle at a time, receiving a certificate for it and then resuming with the next cycle, if he or she wished to, at some later time. The degree would be awarded upon completion of all cycles.

Much of the discussion on this topic concerned the role of the community colleges in offering a "second chance" at higher education. The Soviet participants agreed that these colleges could be "justified" by the two-year occupational training curricula they offered, but they believed, as Vinogradov put it, that "it should not be part of their mission to serve as a 'reservoir' of students for the four-year colleges." It seemed to them inconsistent to

have an elaborate procedure of testing and of inspection of high-school grades in determining admission to four-year institutions and yet to admit into the third year of those institutions students who came from two-year colleges with very varied courses of study, sometimes carried out intermittently over a long period of time, and in some cases even without a high-school diploma.[1] Kuznetsov said that research at the Open University of Great Britain, which also had no entrance requirements, had found that most of the students who dropped out were "those who did not have a full, solid education at the secondary-school level." In the Soviet system, a person who wants to return to higher education after having been out for more than three years must take the entrance examinations again and begin over as a first-year student, just as a physician who does not practice for more than five years loses his or her license. Leaves of absence for a year or two, or transfers to another vuz or into extramural education, were granted, "though not so liberally" as in the U.S. and "not so much according to the student's whim." Kuznetsov and Vinogradov argued that these restrictions constituted "a certain kind of discipline for the student" that "increased the effectiveness of his studies." Cross said that similar differences of opinion about the community colleges could be found in the U.S.

Toward the end of the session, Kuznetsov suggested that future cooperation between ETS and the Institute on Problems of Higher Education could begin with an exchange of specialists; Soviet specialists would study methods of selection in the U.S. and U.S. specialists would study processes of occupational orientation in the Soviet Union. After six months or a year, a group of experts would be convened to derive generalizations, scientific implications, and practical recommendations from what had been learned. Turnbull reminded the seminar of the earlier discussion of the comparability of degrees and asked if there would be interest in

> ...a serious study of the comparative knowledge and competency possessed by people with advanced degrees in the two countries, with particular emphasis on those aspects of comparability that would help in the movement of scholars and advanced students between them.

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[1] Officials of the College of San Mateo had emphasized, with pride, the fact that California's community colleges admitted any applicant who was a resident of the state and was at least 18 years old, regardless of whether he or she had completed high school. To illustrate the benefit of such a rule, they presented a student who told a tale of having dropped out of high school, worked and traveled aimlessly for several years, then entered San Mateo, dropped out and returned a couple of times, but was then finishing his two-year course of study and was planning to transfer to UC-Berkeley to study architecture. In subsequent informal conversations, some of the Soviet participants expressed disapproval of such "laxity" and said that the student had seemed to them to be ill prepared for study at a vuz of the quality of Berkeley.--Ed.

Kuznetsov, deploring the fact that so few students from each country were now studying in the other, urged a detailed study of the content of education in the respective vuzes, to make it easier for educators to know where in their higher educational system a student from the other country should be placed. Marland asked whether it might not be "more efficient, and possibly more valid," to administer the same examinations to students in a few selected fields in the two countries--i.e., "to measure output rather than input"--though he wondered whether it would be feasible. Turnbull pointed out that, at least for levels below the Ph. D., it would be necessary to take student ability into account, since that introduced so much variability into the amount that a student learned. There was general agreement that the details of procedure should be left to those who would eventually undertake the study. Spurr suggested, however, that a valuable first step might be to interview students from each country who have studied in the other. Bailey offered to make available, from the files of the American Council on Education, the names of the U.S. students and scholars who have gone to the Soviet Union under the Senior Fulbright Program.

April 2 Session

This session was entirely devoted to discussing plans for the return seminar in the Soviet Union and to cooperation beyond that. Vinogradov and other Soviet participants said one conclusion from their U.S. visit was that more time should be spent at each institution, to allow participants to learn about it in some depth and to explore their individual interests. Feldmesser agreed, and added the suggestion that the first two or three days of the Soviet visit be spent at the Ministry of Higher and Secondary Specialized Education, to get a picture of higher education in the country generally, so that the time at each institution could be used more efficiently.

Topics suggested for future cooperation were a careful tracing, in proper sequence, of the steps involved in the admissions process; organization of students' out-of-class studies; and organization of libraries.

Kuznetsov offered for consideration a tentative plan for the return visit. It would begin in the later part of September and would occupy three weeks. The major topics would be nontraditional forms of education and the planning of higher education in relation to manpower needs. The first three days would be devoted to "an initial discussion of the agenda items"; the U.S. delegation would then visit Soviet vuzes and return for a concluding seminar. Papers would again be exchanged in advance but this time in the original

language, leaving it up to the receiving side to arrange for translation, in the belief that this would save time. The cities to be visited might include Moscow, Tashkent, Novosibirsk, Tbilisi, Leningrad, and Talinn. Several U.S. participants expressed the hopes that they would be able to spend a substantial amount of time at a few of the institutions, and that there would be an opportunity to get an overview of the system at the outset, but otherwise there was general agreement on these plans. Some of the U.S. participants mentioned subjects of special interest to them: Cross, nontraditional studies, especially in lifelong learning, as well as on-the-job training and other education carried on by "non-educational" agencies and the use of new instructional media and techniques, especially for use in self-pacing; Glenny, methods and procedures in manpower planning, at the republic and national levels, and resource allocation; Turnbull, occupational orientation, and instruction in the English language at both the university and pre-university levels, including the kinds of examinations that are used; and Spurr, administration at the university and the ministry levels, and professional education in forestry.

Kuznetsov and Turnbull, on behalf of their respective delegations, expressed satisfaction and pleasure with the seminar and with the personal encounters that had been a part of it and spoke of their keen anticipation of the return visit. "We believe," said Turnbull, "that we are at the beginning of lasting cooperation."

NEW FORMS OF HIGHER EDUCATION IN THE U.S.S.R.

V. N. Chetverikov

The right to education, together with a number of other social benefits (the right to work, to rest, to free medical care), is a constitutional right of Soviet citizens. As early as the first years of the Soviet regime, forms of education were widely introduced that had never been known before in either general or vocational schools. It is sufficient to refer to the schools for the liquidation of illiteracy (as a result of whose activity an almost illiterate Russia was transformed into a country of complete literacy), the workers' faculties, and open access to the university lecture-halls by large numbers of young people of worker and peasant background. It should be pointed out that these forms were unusual, non-traditional, non-academic in the ordinary sense of that word. Great masses of workers relied upon them for the acquisition of their education.

The achievements of the Soviet Union in the area of education are well known. At the present time, in accordance with the needs of the scientific-technical revolution in our country, a broad program is being laid out for the further development of the entire system of education. The demands of the many-sided development of the individual are becoming especially urgent. Consequently, the tasks connected with the further perfection and development of the forms and methods of instruction also remain important. Their aim is the same: to provide the maximum opportunity to millions of people to receive an education, including a higher education. It should be noted that, thanks to the powerful development of science, the development of the education industry, and the equipping of the teaching process with technical devices, there has emerged the possibility of using forms and methods in higher education that allow the involvement of broad strata of the population, even those living in the geographically most remote parts of the Soviet Union.

Before proceeding to the discussion of new forms of higher education in the U.S.S.R., I would like to call attention to the complexity in the use of such terms as "traditional forms of education," "non-traditional forms of education," and "new forms of education." These terms can have a different interpretation in each specific country, in each specific language, and at each specific stage of development of the educational system of a given country.

Evening and Extramural Education Without Interruption of Work

Evening and extramural education without interruption of work was developed in our country after the Great October Socialist Revolution, primarily as a means of increasing the skills of specialists but also as a way of giving assistance to young people in preparing for examinations without having attended lectures. In 1929-31, in connection with the huge need for specialists with higher education and for skilled workers, special attention was given to extramural education. In this period, major extramural institutes were founded in Moscow and Leningrad. Extramural departments were opened in many regular (daytime) vuzes. In the 1928-38 period [sic], a transition was made to the system of education by courses, with intramural verification of knowledge in the major disciplines. In 1935, entrance examinations were established for the extramural vuzes; these raised the requirements for extramural instruction. The system of extramural education developed into its final form in 1938. At that time, the nomenclature of specializations and the network of autonomous vuzes were established; the course system of instruction, with required reports and examinations in all disciplines of the study program, was introduced into all extramural vuzes and departments; supplementary paid leaves from the place of employment were established for extramural students. At the present time, evening and extramural instruction occupies an important place in the system of higher education. The training of cadres without interruption of work plays a significant role in providing the economy with highly skilled specialists. In our country more than two million people are engaged in higher evening and extramural education, which is convincing proof of the activity and vitality of these forms of instruction.

Existing practice in the training of specialists without interruption of work allows a higher education to be obtained by graduates of secondary schools, technical academies, and secondary specialized schools in either of two ways: a one-stage education, from the first through the fifth (or sixth) years, leading to the award of a higher education degree; or a two-stage education in technical specializations (the first stage, from the first through the third years, consisting of general technical training, and the second stage, from the fourth through the sixth years, of special training, followed by the award of a higher education degree).

Extramural higher education in the U.S.S.R. may be received in special educational institutions [i.e., those offering only extramural education—ed.], in the extramural departments of conventional vuzes, in the branches and study-counseling centers

(UKP) of extramural vuzes in the urban and industrial areas, and also in major enterprises and construction projects. UKP's are organized for a minimum of 200 students and branches for 1000.

In the evening and extramural vuzes, preference is given to applicants whose work is similar to the specializations they have chosen for their education. They are required to have been working at this specialization for at least six months. In the last few years, qualitative changes have taken place in the extramural student body. While previously the overwhelming majority had consisted of people who had completed a general-education school, now the student body includes graduates of the general-education schools, the technical academies, and the specialized secondary educational institutions, with the latter category constituting a significant percentage. During the last few years, we have also observed many people who want to receive a second higher education, often in a closely related specialization. In a number of universities, there are [separate] departments for these people. The periods of study for students in these departments vary from one year (by taking leave from work) to four years (without interruption of work). Thus, at the present time the system of evening and extramural higher education in the U.S.S.R. embraces a wide circle of workers, from those who have completed a [secondary] general-education school to those who have graduated from a vuz.

With the aim of expanding the opportunities for evening and extramural education, the question is being discussed of organizing, alongside the current system of education, separate cycles of disciplines, so that those who wished to study them at a more convenient pace would be able to do so.

The various ways of training specialists without interruption of work are closely interrelated and have sufficient flexibility and accessibility for all workers who want to raise their educational level or occupational skill, or to satisfy growing spiritual needs. The quality of the extramural training of specialists is constantly increasing, thanks to the perfection of the instructional process and the heightened role of the students' independent work, as well as the preferential admission into the vuzes of people sent to study by work enterprises. A further improvement in this form of instruction will be to increase the availability of specializations which do not involve large amounts of laboratory work or constant supervision of students by teachers.

Forms of Instruction Carried by Television

One effective method of training specialists and of upgrading their skills is instructional television, and it plays an important role in the system of extramural and evening higher education. Television as a means of instruction has substantial influence on the improvement of various forms of education. It will therefore be useful to explore this question.

Systematic television transmissions for extramural students began in the 1964-65 academic year, first in Leningrad, then in Moscow, Kiev, and several other cities. In subsequent years instructional television was intensively developed. For example, in the 1973-74 academic year, higher education program transmissions were broadcast in 23 cities of the Soviet Union. At the present time, more than 100 higher educational institutions in the USSR use closed-circuit and open-broadcast television in their instructional processes. The overall amount of open-broadcast instructional television transmissions in the country is more than 8000 hours annually. In addition, more than 15,000 hours of instruction are carried on closed-circuit television in the higher educational institutions. In seven union republics (the RSFSR and the Ukrainian, Byelorussian, Uzbek, Georgian, Kazakh, and Kirgiz S.S.R.'s), the time allocated to educational purposes is used for the transmission of regular courses, while in two republics (the Lithuanian and Moldavian S.S.R.'s) it is used for review and updating lectures.

The application of educational television in the higher schools has a dual significance from the point of view of continuous learning. First, valuable experience is being accumulated in the instruction of adults with the help of television, which -- with certain modifications -- can be successfully applied to the system for upgrading skills. Secondly, the painstaking work of involving an ever larger number of extramural students in the system of instructional television facilitates the creation among them of a habit of receiving instructional information by television, which makes televised learning completely familiar to them. This will also be a prerequisite for creating the possibility of mass retraining of specialists by television.

The system of instructional television that has proved most useful and valuable in the instructional process of the higher schools is that of the higher educational institutions themselves. In this system, the instructional programs are originated in the television centers and studios of the higher educational institutions and are put out over the air by republic and regional television centers.

The further penetration of television into the instructional process of the higher schools could proceed along the following basic lines:

— equipping higher educational institutions with instructional closed-circuit systems of various levels from the simplest instructional demonstration sites, as a component of a complex of the newest technical means of education, to systems of full complexity;

-- expanding the transmissions of instructional programs sent out from the television centers of higher educational institutions for a wide audience of people who are studying without interruption of work;

-- organizing and broadcasting, from the television centers of higher educational institutions, sequences of educational programs for a wide audience of specialists, dealing with problems in the modern organization of production and management, the economics of production, Soviet labor legislation, the latest scientific and technical achievements, and modern technology;

-- organizing, at those higher educational institutions which have television centers with broadcast capabilities, a wide network of television schools and courses whose purpose would be to offer the opportunity to both urban and rural working youth to prepare themselves for entrance into higher educational institutions on the level of the present-day requirements of the higher schools.

A project of special interest is the creation of a unified West-Siberian system of closed-circuit instructional television. The possibility of such a system was confirmed by experimental instructional broadcasts over radio-relay lines undertaken by the Tyumen' Industrial Institute and connecting Novosibirsk, Omsk, Tyumen', and Tobol'sk. The creation of similar regional systems of instructional television will allow the higher educational institutions to coordinate the efforts and the creative talent of leading educators in the solution of instructional tasks and the mutual enrichment of various scientific schools. At the present time the Tyumen'-Tobol'sk and the Nizhnevatovsk-Surgut radio-relay lines are already in operation. They provide reliable high-quality transmission of instructional television programs. The re-transmission of instructional programs from the studios and lecture-halls of the Tyumen' Industrial Institute to the oil- and gas-producing district facilitates study for students who live at a considerable

distance from the cities. The further expansion of the radio-relay network, which will bring television lectures to the remote districts of the Tyumen' region, will sharply increase the number of extramural students.

In consideration of the basic need of extramural students for systematic sequences of lectures, and in response to the desires of the special contingent of construction students on the Baikal-Amur railway, the Ural Polytechnical Institute is making videotapes of appropriate televised courses, which it sends to students living in remote districts.

In the U.S.S.R., the problem of using television for the establishment of contact between scientists working in scientific-research centers and students in higher educational institutions has been successfully solved. At the end of 1974, through the efforts of the Novosibirsk Electrotechnical Institute, direct television contact, via a relay line, was established with the Mathematics Institute of the Siberian branch of the Academy of Sciences of the U.S.S.R. From a studio set up in the Mathematics Institute, the lectures of prominent scientists were transmitted to the lecture halls of a higher educational institution 30 kilometers away. At the present time, a thematic plan of televised lectures is being worked out which will be systematically delivered over the "Akademgorodok-Novosibirsk Electrotechnical Institute" relay line. (Akademgorodok is the city where the Siberian branch of the Academy of Sciences is located.) It is to be presumed that the higher educational institutions of Novosibirsk and other cities will make wide use of so powerful an information medium as a direct television connection with Akademgorodok.

The People's Universities

The People's Universities, which are an integral part of the socio-political and cultural life of the nation, are a public form of education and self-education of the Soviet people, of the planned and purposeful elevation of their intellectual and cultural level, their work skills, and their preparation for performing various social functions. Along with existing state educational institutions, the people's universities represent a successful form for the satisfaction of the demands of the workers for the systematic acquisition of knowledge. The basic goal of the people's universities is to raise the skills of people engaged in production or in other occupational activity in the national economy.

People's universities are created by social, state, and creative [i.e., artistic] organizations on the basis of broad

social initiative and with consideration for the needs and interests of the workers as well as the demands of the cultural and economic development of districts, enterprises, collective and state farms, etc. Depending on the direction of their activity, the organizations which created them, and the base upon which they have been created, the people's universities, become part of the system of the appropriate social organizations ministries, bureaus, and creative unions, which exercise direction over them and offer them assistance in all their activities. There are at present about 34,000 people's universities in operation, with about 8,000,000 people studying in them.

The structure of a people's university depends on the concrete conditions and needs. A university may include departments (in special branches of knowledge of a given sort), divisions (working in parallel with the programs of the departments for different groups of students), or branches (established in factory departments, enterprises, collective farms, at the students' place of residence, etc.). Where necessary, the people's universities organize consultation points for those who wish to improve their knowledge of methods of self-education.

For conducting the necessary organizational work and the direction of the instructional process, councils are set up on a social [i.e., voluntary--ed.] basis; the size of these councils is set in accordance with the conditions. The council membership is made up of representatives of the teachers and the students and of the founding organizations and other interested organizations. The council is headed by the rector of the people's university, who exercises direction over all the activity of the university. The council members and the rector and deans are confirmed by the organizations which founded the people's university. Staffing is done by social and state organizations, with consideration for the general and special educational backgrounds of the students and their needs and wishes.

The people's universities accept workers, collective farmers, and specialists in various branches of the economy and culture -- anyone who wishes to deepen and supplement his knowledge without interrupting work. Anyone may apply, and there are no limits on admissions. Registration is conducted under the supervision of the council. All persons who want to attend the lectures and other activities of the people's universities may be invited to do so, even though they are not enrolled as students. The obligations of the students include diligent attendance and performance of the designated minimum of independent exercises and practical work.

The collectives of the students, departments, divisions, and branches of the university select monitors, and in the large universities a monitor staff, which renders assistance to the university councils in the organization of all instructional work. The people's universities work according to instructional-thematic plans and programs, which are developed by the university councils from the model instructional-thematic plans and programs recommended by the All-Union "Knowledge" Society, which has been awarded the Order of Lenin.

The basic form of instructional activities is the lecture, with wide use of many kinds of instructional aids. Besides lectures, the people's universities make use of seminars, laboratory work, debates and discussions, and lectures with artistic accompaniment; excursions, collective attendance at and discussion of theatrical and film presentations, scientific-practice and readers' conferences, and question-and-answer evenings; meetings with scientists, social and governmental leaders, representatives of the artistic intelligentsia, and production innovators; films, radio, television, and other modern means of mass communication; and assignments of independent work (preparation of papers and reports, practical projects, proposals for work improvements, etc.). For consolidation and review purposes, end-of-year discussions and practical-scientific conferences are held.

Upon completion of the university (most of them offer programs of two, three, or four years), a certificate or diploma is issued. If a worker has completed a course of studies directly connected with his occupation, the university council will petition the administration of his enterprise to promote him to the next higher skill category. His salary will naturally be increased as well. Often the diploma of a people's university qualifies the graduate for a so-called social occupation: public law consultant, public instructor on technical creativity, propaganda lecturer, etc.

The foundation for the development of the people's universities are the higher educational institutions and the scientific-research institutes. By virtue of this foundation, the people's universities have at their disposal the most skilled cadres of instructors and the necessary material base for instruction, and they successfully deal with the tasks of the self-education of the workers and promote, through centers for scientific methods, the upgrading of skills and the acquisition of knowledge in various branches of science and technology. The higher educational institutions offer a good material base for instruction, visual aids, technical devices, teaching laboratories, offices, libraries, and reading rooms. A standing collective of people's university teachers, attached to the higher educational

institutions, provides not only an integral and balanced system of knowledge based on principles of sequence and continuity but also a unity of instructional programs among the departments and branches, as well as a most rapid implementation of methodological recommendations and the dissemination of constructive experience in the methodology of teaching. A characteristic feature of the people's universities is their activity in scientific research, rationalization [of production processes--ed.], and invention. The structure of these universities permits a substantial broadening in the training of highly skilled cadres and the concentration of major scientific forces on the elevation of the educational level of specialists.

The experience of the People's University of Technical Progress and Economic Knowledge of the City of Moscow deserves some attention. It was founded in 1960 and operates on a base of 15 leading higher educational institutions and two scientific-research institutes. It has 15 departments organized in four divisions. The deans of the corresponding higher educational institutions direct the work of the divisions. Several of the departments conduct competitive selection [of students--ed.]. Instruction is provided by scientists and teachers of the higher educational institutions and by directors of enterprises and organizations; among them are academicians and corresponding members [of the Academy of Sciences--ed.]. Since the founding of the City of Moscow People's University, 26,000 students have completed it.

The Plant-Higher Technical Educational Institution

The decision to organize in our country so-called "plant-vtuzes"[1]--i.e., [educational] institutions at industrial enterprises and firms -- was prompted by the following concrete circumstances:

-- the wide-scale training of specialists in the U.S.S.R. permits the annual preparation of several thousand engineers for strictly defined types of production;

-- the training of an engineer by the joint efforts of a higher educational institution and an enterprise gives him knowledge about concrete production while he is still a student, thus preventing the loss of time in adapting to the job after receiving the degree;

-- the combination of study at an [educational] institution with properly organized production work at an enterprise gives

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[1]A vtuz is a vuz that specializes in technical subjects--ed.

rise to a successful mixture of general, broad theoretical engineering training and deep occupational knowledge and skills in a relatively narrow field;

-- our country's planned economic system provides a rational distribution of higher educational institutions as well as the necessary quantity of engineering graduates and their deployment among the branches of production.

The plant-vtuzes are charged with training engineers of special types for specific enterprises from among the employees of those enterprises and with their help, by means of an organic combination of theoretical instruction and production training. The large industrial enterprises, and even more so joint enterprises and firms, which have at their disposal sufficient advanced technological equipment and effective laboratories and scientific-research services, form a good base for the practical training of a future engineer. However, it must immediately be emphasized that in performing this function the plant is supposed to be not simply a place for practical training but also an active participant in the formation of the future specialist.

Our plant-vtuzes are organized and operate under a single pattern, but there are differences in the way it is implemented. Study in this type of institute is carried out in alternate periods of fulltime study and study combined with work. This means that during one interval the student is only at the institute each day, and during the next period he works at the enterprise and also studies independently and attends classes at the institute several times a week during nonworking hours. Then the cycle is repeated, and so on, for the entire course of study. The length of these intervals varies in accordance with a number of factors, including the character of production at the plant. For example, the institute at the Moscow Automobile Plant plans to operate normally with a cycle of alternating weeks, while the institute at the Leningrad Metallurgical Plant uses a cycle of alternating years. The alternation of periods of study-only and combined work and study is not an end in itself but only a means for the realization of a combination of theoretical and practical training of students. The most important difference between the plant-vtuz and other forms of higher schools is the organic combination and mutual inter-penetration of theory and production practice in the training of the student.

Since there is less time for theoretical training during the periods of combined work and study than there is during the periods of "pure" study, it is necessary to distribute instructional time rationally among the various disciplines and their subdivisions. Despite the fact that the total course of

study in the plant-vtuzes is lengthened to six years, the total amount of instructional time is somewhat less than in the ordinary fulltime institutes. In order to achieve an optimal combination of general and specialized knowledge, the same number of classroom hours is allocated for the study of the fundamental sciences as in ordinary fulltime vuzes, but somewhat fewer hours to the study of the specialized engineering disciplines, on the assumption that this will be compensated for by the student's production training at the plant. From this there follows the necessity for a special organization of the student's production activity and the utilization of the production conditions for the instruction of the future engineer. This organization requires the joint activity of the institute and the plant upon which it is based.

All students must work at the base plant, and at jobs that can contribute to the formation of a future engineer of a particular type. In the beginning courses, students work at machines, conveyors, and other equipment in the capacity of workers or quality-control inspectors. Students in the advanced courses perform the duties of an engineer, on the shop floor or in an office or laboratory. During the six-year course of study, the student must move to another position between two and four times, so that he may become familiar with another piece of equipment, study the nature of a junior executive's activity, or learn the work habits of an engineer.

The placement of students in different kinds of work is directed by the institute and, of course, carried out by the plant. Since both the institute and the plant are interested in the development of an engineer of a high level of skill, it is quite easy to organize the required placement of the students. The plant takes the initiative in determining the specific jobs of students, with the goal of ensuring that, by the time they receive their degrees, they will have acquired the knowledge and work-habits necessary for the resolution of the particular engineering problems which are of concern to the enterprise. The institute checks to see that the jobs proposed by the plant correspond to the plan for an engineer's training, and, what is more important, uses these jobs to organize the study of those segments of the instructional programs which cannot be studied effectively in the classroom. The study of these segments under production conditions is carried out by the student in accordance with special programs drawn up by a department of the institute with the agreement of the directors of engineering services at the student's job and in the shop or office. These studies include such topics as the placement of machines and the general flow of work, manufacturing processes in the articles produced by the plant, methods of designing products, technological processes,

and devices, the economic analysis of production, methods of production administration, etc.

In addition to the programs, the departments also put out methodological aids, which contain necessary reference material and instructions for the students about how to study the questions set forth in the program. An instructor is assigned to each group of students; this instructor can be consulted about the program questions and he sees that they are satisfactorily answered. Students working in engineering positions usually have an experienced engineer of the plant assigned to them, who directs the process of acquiring the necessary work habits.

Each student receives an individual assignment for study of each of the segments of engineering disciplines in production, writes papers on the topics of these assignments, and participates in discussion of the papers or of oral reports of other students, in seminars under the direction of a teacher. Students also take part in a laboratory practicum, which is conducted both in the institute's laboratories and in the plant. The practicum in the plant may be organized in three basic ways: utilization of the plant laboratories for study purposes, participation in carrying out research during the student's instructional time, and carrying out research as part of the student's work assignment. By skillfully combining all types of laboratory practice, the institute not only conveys the necessary amount of knowledge to the students but also, together with the plant, instills in them important habits.

The students' accomplishment of course and degree projects is organized similarly. The projects may be essentially academic (abstract) or based upon concrete material of the base plant, or they may be carried out on assignment from the plant during either working or study time. The projects which are most valuable for the shaping of an engineer are those carried out by students in the course of a work assignment. The overwhelming majority of degree projects include plans drawn up on assignment from the plant and adopted by it for implementation.

It is not easy to combine study with production work. Therefore students of a plant-vtuz are allowed several additional privileges. The entire period during which students are enrolled in the plant-vtuz, including the times when they are studying without working, is counted toward their work experience [e.g., for purposes of calculating seniority]. Students of a plant-vtuz are allowed a paid annual vacation of the same length and at the same rate of pay as any worker occupying a similar position, and this vacation must be permitted in the summer, when the student is not engaged in studies. For the days when they are working in the plant, the students of a plant-vtuz receive full

pay, and for the days when they are studying without working they receive a stipend from the plant at a rate 15 percent higher than the general state stipend. The students are members of the trade union at the plant and enjoy all the rights and privileges provided to trade-union members: paid sick leave, trips to rest homes and sanitoria, use of sports facilities and clubs, etc.

The enterprise or firm at which the institute operates renders substantial material aid to it. In the majority of cases, the buildings in which the plant-vtuz is located belong to the enterprise or were even specially constructed by the enterprise for its institute. The enterprise supplies the institute with the necessary equipment for laboratories, classrooms, and other purposes; sometimes, this equipment is specially purchased by the plant for the institute. Above and beyond the direct expenditures on student stipends, the plant also bears the indirect cost of the salary of the engineers and experienced workers who teach the students. However, the plant-vtuz is not part of the enterprise in the administrative sense but rather is an autonomous establishment, subordinate to the Ministry of Higher and Secondary Specialized Education, which exercises control over the instructional process and the quality of training and also finances the institute, including faculty pay.

In accordance with the general rules of admission into institutes of the Soviet Union, persons who want to obtain a higher education in a plant-vtuz must present a document showing that they have completed secondary education (general or specialized) and must pass competitive entrance examinations. They must also present a document from the base plant showing that they have been sent to study at the plant-vtuz.

Experience has shown that the training of specialists in the plant-vtuz system provides engineers with deep and broad knowledge of general problems and at the same time with the knowledge and habits necessary for the resolution of particular technological tasks. The presence at a plant or firm of its own institute allows it to make opportune placements of students at work in one or another unit with a view toward the long-range needs for engineers of a particular type and to give students well in advance the necessary picture of the concrete tasks which they will have to deal with in the position of engineer. The necessity for a plant to devote resources to the training of engineers is fully compensated by the benefits it receives from the quality of work of these engineers in the very first years on the job.

The Scientific-Research Establishment as an Institute of Higher Education

A few words may be said about a form of higher education to which not only vuz teachers, but also scientists whose basic activity takes place in other establishments, go to study. A very effective, flexible, and sufficiently economical system for the training of cadres in such a vuz incorporates joint work in the instruction and development of specialists by the vuz and the base scientific-research establishments.

The instruction of the students in the general scientific and the general engineering disciplines is done through programs organized directly at the vuz. Training in the specialized disciplines and the direction of the independent scientific-research work of the students is carried out through special programs, which are created in the appropriate scientific-research establishments. Personnel of these establishments are also recruited to teach in the general engineering programs of the vuz.

The instructional process is arranged in such a way that in the beginning courses the students study general scientific and engineering disciplines. Mathematics, general and theoretical physics, mechanics, philosophy, and other subjects are taught at the level of university courses; the students study two foreign languages, etc. Considerable attention is paid to the study of the applied, practical aspects of these disciplines (carrying out independent assignments, laboratory work, writing papers, etc.).

In the advanced courses (special and research cycles), the students acquire the knowledge necessary for work in one or another area of research. At the same time, students are drawn into the scientific-research work of the scientific-research establishments, where they carry out and defend degree work. As a rule, the topics of this work are integral parts of the research plan of the establishment. Finally, the degree work is presented in the form of scientific articles published in the leading journals or of special scientific-research reports. The practical work of the students in the advanced courses is completely merged with the activity of the regular staff of the establishments.

Experience with this sort of system in several vuzes has completely proven its value, although the organizational structure of the instructional process is quite complicated. Practice shows that when the special training of students is carried out directly at the scientific-research establishments, the future specialists master the most up-to-date achievements in that branch of knowledge in which they will be working. The very process of

going through the schools of the scientific-research establishments also plays a significant role in the shaping of the student body. Students in the advanced classes, finding themselves in an intensively working, creative collective of scientific workers and engineers, learn to work actively themselves and acquire the habits of independent scientific research.

Conclusion

The new forms of higher education reviewed in this report arose in the course of development of Soviet society as a means whereby a number of problems could be resolved which had been put forward by the scientific-technical revolution and the ever-growing aspiration of our people for a higher general-educational and cultural level. The scientific-pedagogical collectives of the vuzes conduct a ceaseless search for the means and methods of further increase in the effectiveness of the entire system of higher education in the U.S.S.R. Great attention is being paid to the perfection of the new forms of day, evening, and extramural education, because to a substantial degree the further progress of our society depends on the solution of the urgent problems of satisfying the spiritual interests of Soviet people.

AN INTRODUCTION TO NON-TRADITIONAL EDUCATION IN THE UNITED STATES

K. Patricia Cross

Definition

It is difficult to give a precise definition of non-traditional study. The Commission on Non-Traditional Study, after groping for a succinct definition, finally concluded that non-traditional study "is more an attitude than a system and thus can never be defined except tangentially" (Commission on Non-Traditional Study, 1973, p. xv). The name itself implies a protest against "traditional" education, but the approach taken by the advocates of non-traditional education is not negative in the sense that they would abandon or diminish traditional education. Rather, they call for positive action in the form of new alternatives that add flexibility to traditional education. In particular, non-traditional study is concerned with creating alternatives to the time and place requirements of traditional education. The rationale for non-traditional study is that where or when learning takes place is not nearly as important as its impact on the learner. Thus, non-traditional study is said to emphasize learning more than teaching, competencies more than credentials, and convenience for the student more than convenience for the institution.

Although the philosophy behind non-traditional study is unrelated to the age of the student, it is nevertheless true that flexibility with respect to the location and time frames of education has a special appeal to adult learners, whose job and family responsibilities often prevent residential study in a conventional college classroom. Thus, the non-traditional student is commonly defined as a learner who would be denied educational opportunity were it not for the time-free, place-free arrangements of non-traditional study -- and that means, usually, an adult, part-time learner. Similarly, non-traditional programs are most often characterized by off-campus locations and by a commitment to adapt education to the special needs and interests of adult learners. These characteristics are brought into being by delivery systems that take education to the learners, by independent study that permits learners to schedule and pace themselves, or by "experiential education" that takes advantage of learning resources outside the classroom.

A Brief History

Although virtually all of the components of the non-traditional movement existed in the United States prior to 1970, the articulation of goals has occurred more recently, along with dramatic increases

in the number of non-traditional programs. The stimuli for the non-traditional movement were present in a variety of forces for change in higher education, but the movement was sparked into action and given visibility largely through the initiatives of a private foundation -- the Carnegie Corporation of New York. A widely quoted speech by the president of the foundation (Pifer, 1970-71) on the need for an external degree was followed by the creation of the Commission on Non-Traditional Study, funded by the Carnegie Corporation and sponsored by the College Entrance Examination Board and the Educational Testing Service. The Commission brought together a group of national leaders to discuss issues, formulate recommendations, and bring national attention to the need for new flexibility and alternatives in higher education.

Concurrently with the work of the Commission, two widely read reports stimulated interest and accelerated the growth of the non-traditional movement. The Carnegie Commission on the Future of Higher Education, a study group also funded by the Carnegie Corporation, published a report calling for "Less Time, More Options" (Carnegie Commsission, 1971), and the U.S. Office of Education issued a "Report on Higher Education" (Newman, 1972) which urged the creation of alternatives to traditional education. At about the same time, the federal government took a clear position on the need for innovation in higher education by creating the Fund for the Improvement of Postsecondary Education to finance assistance to public and private postsecondary institutions interested in a variety of reforms that lay at the heart of non-traditional education (Public Law 92-318, enacted in 1972).

Within a very short period of time, the non-traditional movement was full-blown. The Commission on Non-Traditional Study issued its report containing 57 recommendations in 1973 (Commission on Non-Traditional Study, 1973), and this was quickly followed by two books growing out of the work of the Commission. One was a comprehensive treatment of the external degree (Houle, 1973); the other reported the findings of a national research program which provided information about non-traditional students, programs, and issues (Cross and Valley, 1974). Among other things, the research report documented the full reality of the non-traditional movement. Approximately one-third of the 1185 colleges and universities responding to the survey reported that they offered at least one non-traditional program, and almost two-thirds of those programs had been established since 1970 (Ruyle and Geiselman, 1974). Thus, in an incredibly short time span, hundreds of new programs had been launched in response to the demand for unconventional forms of education, free of the time and place limitations of traditional classroom instruction.

While the full fruition of the non-traditional movement burst forth in the 1970's, it had its roots in the confluence of

a number of trends and concerns occurring in the 1950's and 1960's. A brief description of these concerns follows:

1. Historically, higher education in the United States has been characterized by an egalitarian thrust, i.e., continuing societal pressures to include broader segments of the population in the opportunities for higher education. The egalitarian pressures were strong following World War II, when returning veterans were given federal grants that enabled them to finance their college educations (the so-called "G.I. Bill"), and as a result they flocked to the colleges. This huge influx of students created a demand that far exceeded the supply, thus helping to stimulate a great growth period for higher education. It was not unusual for existing colleges and universities to triple in size within ten years, and literally hundreds of new colleges were created in the 1950's and 1960's.

Most of these new colleges were public two-year colleges, usually established by local communities to provide vocational and technical programs as well as the traditional academic programs which would enable students to transfer to four-year colleges and universities. Typically, the community colleges had no requirements for admission except graduation from high school. They were oriented and dedicated to serving the needs of the residents of the local community -- in contrast to the four-year institutions that were predominantly residential campuses, drawing students from hundreds and even thousands of miles away.

The community colleges welcomed all segments of the society and made it realistic, for the first time in history of education in the United States, for the <u>majority</u> of citizens to aspire to a college education. The low cost of the community colleges removed the barrier to college for economically disadvantaged segments of society; then open-admissions policies removed the barrier of poor records of past academic achievement; and the nonresidential campus opened college opportunities to students who could live at home and fulfill job and family responsibilities while commuting to college. To adults, of course, these "commuter colleges" opened up all kinds of new possibilities, and they attended in great numbers, thus calling attention to the past unwitting exclusion of adult learners from conventional higher education.

2. A second factor contributing to the rise of non-traditional education also has its roots in the years following World War II. The high birth rates of the late 1940's created a bulge in the educational system, as the children born in returning veterans' families moved through the schools. By the 1970's, this generation was moving out of the colleges, reversing the previous situation: supply began to exceed demand in higher education.

Furthermore, the birth rate of the 1960's and 1970's showed a substantial decline. As colleges became familiar with the birth-rate statistics, it became quite clear that enrollments would continue to decline, forcing reductions in personnel and resources unless some new market of college students could be found. Adults, of course, presented a potentially inexhaustible supply of students to cushion the drop in enrollments of traditional college-age students. It is probably no coincidence that the proliferation of non-traditional programs in the early 1970's came at the same time as the predicted diminution of the traditional youth market.

3. For some years prior to the rise of the non-traditional movement, the Ford Foundation and other organizations had encouraged the adoption of television and other new forms of communication for educational purposes. Their efforts went largely unheeded, however, as long as colleges had more students than they could handle with the known and familiar methods of instruction. But the slowing growth of enrollments, as well as a new emphasis on off-campus learning for adults, created an interest in advanced delivery systems, and the use of the new media for education took on a new life.

Added to the growing sophistication of communications technology and delivery have been new developments in instructional design. Programmed instruction and computer-assisted and computer-managed instruction are all giving rise to realistic expectations for independent, self-paced learning that can be effectively guided and monitored.

4. The continuing "knowledge explosion" has probably contributed two motivators to the non-traditional movement. First, advanced technology has saved human labor and created more leisure time for the average adult. Women, in particular, are beginning to use their new-found leisure by seeking further education and work opportunities. Secondly, the rapid obsolescence of knowledge is forcing workers back to school for continuing education. Increasingly, states are passing legislation requiring periodic study for professional and technical workers. Lifelong learning, whether for jobs or leisure or personal development, is becoming a clear need or desire for many adults.

Thus, the rise of the non-traditional movement in the U.S. is the result of a complex tapestry of motivations and actions — some altruistic and some self-serving; some government-sponsored, others privately sponsored; some spontaneous, others carefully planned. What they seem to have in common is a commitment to provide the options and flexibility that will permit people of all ages and from all walks of life to pursue college educations.

An Overview of the Components of Non-Traditional Education

While variety and diversity characterize non-traditional education today, the programs have some characteristics in common. Most importantly, non-traditional education is student-centered, as distinct from being faculty-centered or institution-centered. It "puts the student first and the institution second, concentrates more on the former's needs than the latter's convenience, encourages diversity of individual opportunity rather than uniform prescription and de-emphasizes time, space and even course requirements in favor of competence and, where applicable, performance. It has concern for the learner of any age and circumstance, for the degree aspirant as well as the person who finds sufficient reward in enriching life through constant, periodic, or occasional study."

That statement, made by the Commission on Non-Traditional Study (1973, p. xv) and widely quoted by educators, has important ramifications with respect to the students, content, location, and methods of instruction. It may be helpful to provide brief explanations of these components of non-traditional education before proceeding to more detailed descriptions of some of the programs that constitute non-traditional education.

Students. A non-traditional student is one who needs or desires one or more of the kinds of flexibility introduced by non-traditional programs. More than one-third of American college students today are over the age of 25, and the average age of students in the community colleges is about 28 years. Furthermore, the number of part-time learners in college has already surpassed the number of full-time students, and the number of part-time learners is continuing to increase about three times as rapidly as full-time learners.

Content. In keeping with the student-centered orientation of the non-traditional movement, the content of non-traditional programs is frequently determined by a market survey to discover what adult learners want. Most market surveys conducted by institutions follow the general pattern revealed in a national survey of the learning interests of adults between the ages of 18 and 60. The data show education related to job training and advancement in the lead, with 43 percent of the potential adult market expressing greatest interest in vocationally relevant education. Other learning interests were as follows: general education, 13 percent; hobbies and recreation, 13 percent; home and family living, 12 percent; personal development, 7 percent; and public affairs, religion, and other subjects, 9 percent (Carp, Peterson, and Roelfs, 1974). Thus, the content of non-traditional programs is likely to emphasize the utilization of knowledge for practical purposes such as job advancement, home management, recreation, and other areas of importance in the daily lives of adults.

Location. The location of learning opportunities is probably the most distinctive mark of non-traditional programs. Although evening colleges and extension divisions are frequently included as non-traditional programs, because they provide scheduling alternatives for adult learners, the newer non-traditional programs operate completely free of "place" requirements. Education may be delivered almost anywhere -- home, office, or even commuter trains. Or education may be achieved through "learning contracts" that enable students to utilize a great variety of formal or informal learning resources, wherever they are found.

Method. In keeping with the spirit of providing maximum flexibility for the student, non-traditional programs make use of some of the newest methods for individualizing education. Non-traditional methods are often designed to give learners the freedom to pace and direct their studies. Because of its critical role in non-traditional education, the component of method is given further attention below.

In summary, programs of non-traditional education may be non-traditional in four ways -- students, locations, methods, or content. In 1972, among college programs claiming to be "non-traditional," 70 percent were non-traditional with respect to the type of students served; 67 percent claimed non-traditional locations; 57 percent used non-traditional methods; and 48 percent offered non-traditional content. Only 20 percent of the programs were non-traditional with respect to students, location, methods, and content, but most of the programs were distinctive on two or more of the characteristics (Ruyle and Geiselman, 1974).

Methodological Components and Illustrative Programs

The most visible components of the non-traditional movement are the older adult students and the off-campus locations. Indeed, most colleges joining the non-traditional parade are emphasizing these two components. But in the long run it is probably teaching and learning methods that give sustaining life to the movement. The new delivery systems and recent advances in instructional techniques are the foundation for some of the more sophisticated non-traditional programs that are receiving great national attention. It may be helpful now to describe some of the methods of non-traditional education along with a few illustrations of how programs combine non-traditional components in unique ways.

Delivery systems. The U.S. has been involved for hundreds of years in facilitating the delivery of education to citizens. The "extension services" that began in the last century taught the latest knowledge about farming to rural populations by transporting the "teacher" to the "students" who were living on farms and in small towns. In this century, the physical extension of education

has been accomplished largely through the ambitious effort to establish entire colleges closer to the people. This effort culminated in the recommendation of the Carnegie Commission to create public community colleges "within commuting distance" of all citizens. Today's non-traditional movement continues the extension thrust by providing the ultimate convenience of delivering education into the living rooms, neighborhoods, and offices of learners. Correspondence study and television, in an infinite variety of forms, provide the basis for distant-learning systems.

(a) Correspondence study. The oldest educational delivery system designed to take education to the learner is correspondence study, introduced in the U.S. by the University of Chicago in 1892. Gradually, simple paper-and-pencil correspondence courses have evolved into learning systems with considerable reliance on modern instructional design. Materials are likely to consist of study guides, programmed texts, self-administered tests, and the like. Furthermore, today's correspondence course is likely to be coupled with telephone, radio, television, or tape cassettes. Correspondence courses are common throughout the U.S. and are offered by even the most traditional universities. For example, five of the ten largest state universities in the central portion of the country offer large correspondence programs. In 1974, one state university offered 300 correspondence courses, in which nearly 10,000 students were enrolled.

A more novel correspondence model of current interest is the newspaper course launched in 1973 by the University of California at San Diego. The course, consisting of 20 lectures written by American scholars, was carried in 250 newspapers across the country. While many readers probably read the series for their own enjoyment, 5000 students were enrolled for credit with some 200 cooperating colleges. The newspapers published the course materials without charge; the colleges provided instructors, tests of student achievement, and degree credit.

(b) Television. In its various forms, television constitutes the glamour delivery system for education. Chicago TV College, founded in 1956, is the oldest media-based, degree-granting college in the United States. It is a two-year public community college, supported by state and local funds. It has no campus but delivers about four credit courses each semester to approximately 2,300 students over public (i.e., noncommercial) television. Seventy-five percent of the students are women who find it convenient to participate in the two lessons per week at home. In the 20 years of its existence, Chicago TV College has provided over 150,000 metropolitan-area residents with approximately 215,000 credit

hours of education, and it is estimated that approximately 20,000 viewers watch each program. Most of the credits are used by students to apply toward conventional degrees, but the college has granted 400 degrees that were earned entirely by television. Most of those degrees were granted to confined learners -- prisoners, and patients in the veterans' hospitals -- for whom a higher education would have been impossible without TV College.

Chicago TV College still places heavy emphasis on the television presentation, but the emerging model is to use television as only one component of the course of study. The most sophisticated use of educational television is seen in the new University of Mid-America (UMA), founded in 1974. It is operated by a consortium of six large state universities located in the relatively rural central portion of the U.S., where "distant learning" is a necessity for many geographically isolated learners. The UMA project is heavily funded by the federal government and by some private foundations. The courses, which were developed at high cost, will be available for lease in other open-learning systems, and the extensive evaluation and research program which is part of the project is also expected to be a national resource for those interested in non-traditional education that makes use of the new media.

UMA places heavy emphasis on instructional design and uses a wide range of methods, including broadcast television, workbooks, textbooks, long-playing records, audio- and video-cassettes, tutors, and local newspapers. One of the objectives of the UMA project is to carefully integrate the "media and the message," i.e., to establish sound guidelines for the selection of media appropriate to various instructional goals. In contrast to the low-cost, modest productions of Chicago TV College, UMA represents a highly sophisticated and expensive delivery system. In addition, UMA emphasizes the importance of personal contact, through the operation of geographically-dispersed learning centers where students may engage in a variety of learning activities, including viewing video-cassette lessons and talking with academic counselors. The mail and toll-free telephone lines provide other means for personal contact.

At the Open College of Miami-Dade Community College in Florida, a computer-managed system is used to provide personal attention. Learners enrolled in media-based courses in Open College mail their completed survey tests to the computer center and receive in return a "personalized" diagnosis of their learning problems, along with a prescription for appropriate learning activities. The computerized messages have proved very popular with students, who consistently

rate this service as one of the most popular features of the courses.

At the present time, there are numerous models of open-learning systems built around the component of public television. Almost all of the population of the U.S. has access to television. Indeed, there are more television sets than bathtubs in the U.S. -- one television set for every two inhabitants. Moreover, the average household operates its set(s) more than six hours per day. Many people are convinced that the major impact of education delivered over the public broadcasting system may be on the viewer who watches an instructional program without taking it for credit. For example, one course, with an "official" enrollment of only 18 students, sold 1300 study guides, and thousands more than that number undoubtedly viewed one or more presentations.

There are also closed television methods, known as instructional television fixed services (ITFS), which use low-power, point-to-point transmission. This method is frequently used for cooperative programs between universities and industry. The university simply transmits an on-campus class to a distant classroom provided by an industrial firm. Two-way communications permit workers at the firm to participate in class discussions almost as though they were present on the campus.

ITFS arrangements are not expensive, and they frequently pay for themselves without governmental assistance. Companies may pay anything from $15 to $6000 per year to participate, and the universities have few costs beyond those required for on-campus classes. While the use of ITFS is not extensive at present, the potential is quite great. One university in California is presently offering 30 courses per semester via ITFS, and its equipment could handle 80 courses without additional cost.

There are also other forms of media used to deliver fairly traditional college courses to non-traditional learners. Among these are audio- and video-tapes, which offer the ultimate in scheduling convenience, and an educational telephone network which permits low-cost, two-way audio communication.

Learning contracts. Philosophically and pedagogically, "learning contracts" represent the other end of the spectrum from the media delivery systems described above. Whereas the latter emphasize courses carefully designed by teams of highly trained experts in instructional design and media presentation,

non-traditional programs based on the learning contract emphasize student responsibility for the quality of learning. In this model, the student, with the help of faculty advisors, draws up a learning contract, which is a written plan for his or her education, with objectives, learning activities, and assessment procedures specified. The system of learning contracts is well illustrated by one of America's best-known non-traditional institutions — Empire State College, founded in 1971 as one of 64 degree-granting colleges in the public higher-education system of New York. Empire State has no campus. Rather, it has 30 learning centers, located primarily in the population centers of the state. In 1975, over 3500 students were enrolled, and another 800 applicants were awaiting openings. The students ranged in age from 16 to 72, with an average age of 37. The majority were employed full-time.

When the student enrolls at Empire State, a learning contract is negotiated between the student and a faculty member who is known as a "mentor." The contract describes the educational goals of the student, the planned learning activities, length of learning time, amount of credit, and procedures for assessment. The student typically carries out several contracts before receiving an associate or bachelor's degree (the degrees normally awarded upon completion of a two-year or four-year higher educational institution, respectively).

The purpose of the learning contract is to create an educational program uniquely tailored to individual needs. Learning activities specified in the contract may involve a great variety of activities, including independent study under the guidance of a mentor, a formal course at another college, a correspondence or media-based course, an internship in a government or social agency, a cooperative project with fellow students, or foreign travel. A student may also receive degree credit for relevant competencies developed prior to enrollment at Empire State. Such competencies may be demonstrated in various ways -- through satisfactory performance on tests, submission of a portfolio of accomplishments, documentation of appropriate experiential learning, etc.

Empire State College has a research staff that evaluates virtually every phase of the program -- from the backgrounds of students (most are middle-class with some previous college experience) to their desinations upon leaving Empire State (most go to graduate school). Program evaluations show a high level of student satisfaction and a high level of faculty dedication. But a major complaint of faculty is that the learning contract method requires considerably more work than other models of higher education. So far, the costs of the individualized program of Empire State are somewhat lower than those of the more conventional colleges in the New York system.

Noninstructional Components

The off-campus, non-classroom learning espoused by non-traditional education has raised two fundamental noninstructional issues. First, if "time" and "place" are considered irrelevant as measures of learning, what measures will replace the credit traditionally granted for time served in classroom study? Second, how can information and guidance be made available to off-campus learners? Both questions are being attacked with vigor, and solutions are sought in a variety of ways.

New measures of learning. The need for non-traditional measures of learning has stimulated several interesting efforts. One of these seeks to convert non-traditional learning into traditional credit, whereas another is concerned with breaking away from credit-hour measures altogether. The conversion tactic is represented by two different nationwide projects, both sponsored by nongovernmental educational agencies. The College-Level Examination Program (CLEP) was launched in 1967 by the College Entrance Examination Board to help non-traditional learners demonstrate academic knowledge by offering them 60- or 90-minute objective tests in many different fields. In 1975, almost 100,000 people showed up at about 900 test centers across the country to take examinations that would lead to college credit. About 1800 American colleges and universities now grant academic credit for satisfactory performance on CLEP examinations. While most people earn relatively few credits by examination, it is now possible to earn a bachelor's degree on the basis of examinations alone.

Another approach to the conversion of non-traditional learning to traditional credit is taken by the Office of Educational Credit of the American Council on Education. This office was established to make recommendations to colleges regarding credit for instruction sponsored by noncollege organizations. The office sends a team of subject-matter specialists to visit the site of courses that may be offered by government agencies, industrial or commercial firms, labor unions, and the like. The team scrutinizes the courses and develops recommendations regarding the amount and category of credit to be awarded, and the Office of Educational Credit publishes a catalog of such recommendations for use by higher educational institutions. As of November 1975, this program had reviewed 722 courses offered by 45 organizations, involving about 140,000 students in 18 states.

A third and somewhat different approach to the measurement and crediting of non-traditional learning is illustrated by the Cooperative Assessment of Experiential Learning (CAEL), a project in which approximately 200 colleges are working with Educational Testing Service to develop and test new measures of nonclassroom

learning. The goal of CAEL is not so much to convert non-traditional learning into traditional credits as to make more useful assessments of the skills and competencies of non-traditional learners. CAEL is studying the usefulness of measures such as portfolios (dossiers on evidence of learning assembled by the learner), product evaluation (essays, paintings, etc.), and the assessment of occupational and interpersonal competencies via performance tasks. Such measures are of considerable importance to the entire concept of the "learning contract" model of Empire State College and an increasing number of similar programs.

Information and guidance for off-campus learners. Another noninstructional issue which is receiving increasing attention is the provision of information and guidance for non-traditional learners. A recent study of the learning needs of adults in the state of California concluded that the most immediate problem for the state lay not in the creation of new instructional programs, but rather in better dissemination of information about existing opportunities (Peterson and Hefferlin, 1975). A survey of California adults revealed the widespread desire of adults for help in locating information about present educational opportunities and for help in assessing their own capabilities and potential.

The varieties of efforts made to meet these needs seem unlimited. They include expanding on-campus counseling facilities to accommodate the schedules and interests of adults, forming consortia of educational and community agencies, and creating completely new "information and referral" centers. The methods used range from providing information by telephone or mail, or having a counselor in a shopping center or on a mobile van that travels through neighborhoods, to designing computerized guidance systems that may furnish anything from up-to-date information about learning and career opportunities to an opportunity for interaction with computer programs that take into account the values and priorities of the individual. It is not unusual for some of the information and counseling centers to receive as many as 1000 requests per month for assistance with educational and career information and decisions. Whatever the form, there is now widespread agreement that the non-traditional educational movement must provide auxiliary services to meet the individual needs of adult learners.

Summary

The non-traditional education movement is a natural outcome of the continuous societal press for educational opportunities for broader spectrums of the population. It is also a recognition

of the knowledge explosion and the need for lifelong learning. Up until about 1970, adult learners were not a visible segment of the collegiate population, but today they constitute a major and rapidly expanding group of college students. Colleges are moving to meet the needs of adult learners with an enormous variety of programs designed to offer new alternatives. Programs launched in the 1970's tend to emphasize flexible arrangements with respect to the time and place of learning, but these new options are also leading to greater interest in and experimentation with the more basic elements of education -- content, method, and measurement.

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METHODOLOGICAL ISSUES IN THE FORECASTING AND LONG-RANGE PLANNING OF TRAINING OF SPECIALISTS WITH HIGHER EDUCATION

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Planning for the development of higher and secondary specialized education is an inseparable part of economic planning. Planning of the entire national economy and of the training of specialists have been carried out in our country since the first years of the establishment of the Soviet government. This permitted the training of a sufficient number of specialists who directed the construction of socialism and who at the present time are working on the creation of the material and technical base of communism. At the present time, 23 million specialists with higher or secondary education are working in our country, which means that every fifth person employed in our economy is a specialist.

In accordance with the program of the [Communist] Party and the decisions of the XXIV and XXV Congresses of the CPSU [Communist Party of the Soviet Union], the system of planning in the nation is constantly being improved, which gives rise to the necessity of improving the methodology of planning the development of higher education. The tasks of planning higher and secondary specialized education are complicated and require new decisions grounded in economics. The chief task of long-range planning for the training of specialists is to train them on a scale that corresponds to the needs of the economy as a whole and of each of its branches. In calculating the need for specialists, the following basic factors must be considered:

First, the constant growth in the number of gainfully employed workers and employees.

Second, the need for an increase in the degree of saturation of the branches of the economy with specialists.

Third, changes in the distribution of specialists among the branches of the economy as a consequence of structural advances in the economy.

Fourth, the magnitude of the need for specialists depends on changes in the relationships between specialists with higher and with secondary education in the various branches of the economy.

To the degree that complex mechanization and automation of production spread, and substantial differences between mental and physical labor are eliminated, there will be an increase in the number of jobs which must be filled by persons with a secondary

specialized education; correspondingly, there will also be an increase in the proportion of labor by these specialists among the total number of engineering-technical personnel. All this must be considered in calculating the long-range need for specialists of each branch of the economy and industry.

In determining the need for specialists, other factors must be considered as well: improvement in the system of administration in enterprises, branches, and the economy as a whole, change in the work norms of specialists (load norm and service norm), and improvement in the utilization of the labor of specialists.

In planning the training of specialists, a total and a replacement need are determined. The total need is that number of specialists which there must be in the economy, the branches, the enterprises, and the establishments and organizations in order to perform work requiring knowledge at the level of a higher or a secondary specialized education. The replacement need is that number of specialists which is needed for the staff of specialists in the economy, the branches, and the enterprises, establishments, and organizations in the course of the plan period, in order to make up for withdrawals; to replace a portion of the praktiki, who occupy positions of specialists though they have not had specialized education; and to bring the number of specialists up to the total need by the end of the plan period.

In calculating the total need for specialists, as the practice of planning has shown, it is convenient to apply three basic methods: the normative, the nomenclature of positions, and the saturation of economic branches with specialists. Planning the development of higher education includes: planning admissions and the size of the student body; the graduation of young specialists; the development of an instructional-material base; the training of a teaching staff; and the planning of current and capital expenditures. An integral part of the long-range planning of the development of higher education is the calculation of capital investments in the construction of vuzes during the plan period. The calculation of capital investments is carried out for the construction of classroom and laboratory buildings and of student dormitories. Determination of the magnitude of increase in the material-technical base of the vuzes is carried out on the basis of the number of students in the plan period. In the socialist expansion of the production of specialists, an important part is played by the cooperation of the union republics, ministries, and departments of the U.S.S.R. in the training of specialists and by the specialization of vuzes.

In the forecasting and the long-range planning of the training of specialists, we begin from a complex economic approach to the problems of training cadres of specialists. We must deal with a

complex of tasks in the balancing of plans in branch as well as geographical subdivisions.

The formulation of a long-range plan for the training of specialists is carried out on the basis of principles of centralization and decentralization, under the leading and determining role of the planning organs. The principle of centralization permits the specification of basic socioeconomic tasks for an extended period of time, the establishment of an order of dealing with them, and the determination of priorities, and this in turn determines the total and replacement need for cadres of specialists which can handle the economic tasks that have been presented. The principle of decentralization (or decomposition) allows the interests of local territorial units to be taken into account.

Looking at the system of administration of the training of specialist cadres from the point of view of a theory of administration, it can be affirmed that we have a large (complex) system with a hierarchical structure at its core. It is a many-leveled system, whose structure from top to bottom is subordinated to a single goal; however, within the limits of the goal that has been set, each level has a certain degree of autonomy in making decisions. It is a system with numerous inter-connections and a complex organization of authority. All these characteristics of the system of training cadres have to be taken into account in analyzing it and in working out forecasts and long-range plans.

In consideration of the enormous volume of plan calculations, work is currently under way to automate the process that has been described. In particular, a subsystem, "Higher and Secondary Specialized Education," is being worked out as part of the automated system of plan calculations. It can be expected to introduce modern methods of mathematical economics, with a broad use of computers, into the practice of plan calculations. Our position is that the procedure of planning is to be regarded as making decisions for long-run goals. In these conditions we do not, of course, have full information, and the process of planning amounts to the adoption of task variants.

In the planning of the training of specialists with higher and secondary specialized education, the goals are set and the task is dealt with as part of the class of tasks dealt with by methods worked out for so-called non-zero-sum (or non-antagonistic) games. In a given case, the limitation is the degree of information availability for the long-range period being forecasted. The task is dealt with by introducing assumptions (specifying coefficients) which increase the degree of confidence in the decision taken. A series of variants of the long-range plan is worked out. The final variant is drawn up by the experts who are specialists and responsibile personnel of the planning organs.

The subsystem that has been worked out is formed on the basis of a study of the practice of planning and the formalization of separate tasks to be resolved, though within the limits of the structure that has been worked out. Thus, the automation of procedures for planning the training of cadres of specialists leads to the creation of a man-machine system of plan calculations, in which the leading role in planning (the priority in decision-making) remains with the man. The organization of interaction--that is, the organization of informed, mathematical, organized, and legal provision--is a subject of study at the present time.

Great attention is being paid at the present time to plan indices, especially in a regime of long-term planning. It is clear that specialists must be trained. It would be desirable to have an integrated estimate, but here the need for a differentiated approach to indices arises. An enterprise or firm does not need a specialist in general, but a specialist with some specific skill (specialization), so that the specialist would have a defined body of knowledge.

Our plans are of a complex nature. The complex character of planning, and the necessity of taking into account the peculiarities listed above, require the application of a systematic approach. This systematization, in turn, presumes a thorough consideration of the quantitative aspects of phenomena and processes, which determine the possibility of realizing the plans that have been drawn up and the utilization of computer technology and mathematical-economic models for purposes of their further improvement. In order that these procedures can be carried out by machine, the following tasks must be dealt with:

Among methodological provisions:

--to work out the principles and methods of forecasting and planning the need for specialists with higher education by branch and specialization;

--to construct a model of a specialist derived from the indices of development of the branches of the economy for the entire country, for the republics, and for the economic regions;

--to establish the relationship between the plan for admission of students and the plan for distribution of specialists as the last stage of correction for the admission plan;

--to investigate the possibility of applying the methods of mathematical economics to the tasks of forecasting the development of higher education;

--to work out a set of mathematical models for optimizing the planning structures and coefficients;

For this, methods and models should be used which:

--do not ignore the presence of a close relationship among a large number of factors which determine the behavior of the system under consideration, some of which are qualitative and have no measures by which they can be expressed;

--take into account the greater or lesser indeterminacy of the behavior of the system as a whole and of its separate parts, as a result of the action of accidental factors and the participation of people in the system;

--pay attention to the mutual influence of the system and the environment which surrounds it;

--take timely account of change in the attributes of the system and its environment.

Among information provisions:

--to work out a methodology for the accumulation of data needed for making decisions about the development of the network of vuzes;

-- to create an automated data bank (Fig. 1)[1] which includes information on (1) the vuzes of the region, (2) the replacement need for specialists, (3) demographic indices of the given region, (4) standards in the training of specialists with higher education; and (5) the staff of professors and instructors and the dynamics of the training of scientific cadres within the region.

We shall examine (Fig. 2) one of the possible algorithms for dealing with one task in the long-range planning of the training of specialists: the development and improvement of the location of vuzes in a region. The task may be regarded as being in the following particular situation: The training of a predetermined number of specialists with higher education is required, under the condition that the resources for their training have been predetermined, and the specialists must be trained near the place of their future employment, but also taking account of the fact that at the present time there exists a determinant network of vuzes with well developed traditions and scientific schools.

The selection of a criterion for the condition that the training of the specialists be brought close to the places of their future employment is conditioned by the following factors:

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[1] No figures were included with the text of the paper.--Ed.

--the necessity of coordinating the planning of the location of vuzes with the existing organization of productive forces and with the planning of the economic development of the regions; and

--carrying out the policy of the Party for the development of national [i.e., ethnic--ed.] cadres of specialists and for raising the educational and cultural level of the population.

In the general case, the data base for preparing a long-range plan consists of three groups of factors:

--the economic need for specialists;

--the social need for specialists in the republics and the economic regions;

--the territorial distribution of the training of specialists with higher and secondary specialized education.

Functionally, the procedure for reaching a decision can be divided into five stages.

I. The preparatory stage. At this stage a calculation is made of the possibility of complete satisfaction of the need for specialists with higher and secondary specialized education in all branches of the economy. In turn, to each branch there corresponds a certain number of specialties (and perhaps of specializations)[2] which are the leading ones. The results are used to introduce priorities into the training of a given specialty. In the process of the examination, a forecast of new specialties (specializations) is made. At this stage a decision is taken about the most expeditious form of training.

II. The stage of identifying "white spots." At the second stage the possibility is investigated of satisfying the replacement need of the branches of the economy for specialists with higher education by using the already developed system of education within each republic (or region). As a result, the so-called "white spots" are identified--i.e., those regions which are not being provided with the necessary quantity of specialists (within each specialty)--and a list is made of specialties in which surpluses and shortages are occurring in the numbers of specialists being graduated.

III. Cooperation and specialization. At this stage the possibilities of cooperation among the regions are considered--i.e., the possibility is investigated that it may be expeditious to make up for a shortage of specialists by obtaining them from nearby regions. Decisions are made concerning the establishment of new specialties (and the closing out or reduction of admissions into existing ones) and, on the basis of a comparative analysis,

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[2]The Russian words are, respectively, spetsial'nosti and spetsializatsii.--Ed.

the potentialities of specialized training centers within the region in question. Considering also the results of the examination in the first stage, recommendations are drawn up for improvement or change in the existing network of vuzes. At the same time, the stage is completed of formulating variants, in the distribution plan, for the qualitative structure of the distribution of the training of specialists by region.

IV. Corrections. At this stage corrections are made in the locational structure in accordance with the operative social and political factors. The economic expeditiousness of each of the variants of reorganization in the existing network of vuzes is determined. There is then a return to the third stage, taking into account the changes that have been made. The cycle is repeated until the criteria that were designated have been met.

Finally, in the fifth stage, the siting of capital investments is carried out, by type of work and by time parameters. Starting and completion times are determined (optimization of time expenditures) and, as indicated by the calculation of total expenditures, the final corrections are made in the plan variant that has been worked out.

We shall consider in more detail the block-scheme of the proposed procedure.

In block 1, on the basis of the control figures for the development of the economy and the forecasts of development in the republics, economic regions, and branches, the main factors influencing the development of the nation's economy are identified. On the basis of an enumeration of branches of the economy (block 2), coefficients of priority for one or another branch are specified, with an indication of the republic or economic region (block 3). The branches of the economy are arrayed according to the degree of importance of providing them with specialists in the plan period. In view of the fact that the count of specialists is known (block 4), the expert estimates (block 5) and the needs (orders) of the branches of the economy are used as the basis for specifying coefficients of priority (block 6) in the training of specialists in the most important specialties. The selected coefficients are subjected to expert appraisal (block 7) and decisions are worked out for the introduction of new specialties.

In block 8, the question of the place of the training of specialists in a given specialty in a given region of the country is settled. For this purpose, data should be brought in on the replacement need for specialists for the branches of the economy, with an indication of the republic or the economic region (from block 9), and data about the vuzes (block 10) which are training specialists in the given group of specialties with an indication of the republic or the economic region, and where they are located--

i.e., data about the possibility at the present time of training the predetermined quantity of specialists with higher education by using the existing capacity of the vuzes. At this stage, an estimate is made of the degree of correspondence between the composition of the system of higher education (the network of vuzes) training specialists in the given specialty and the needs of the economy.

In accordance with the decision on distribution, the first variant of the plan for training specialists is drawn up, under the conditions that the needs for training specialists can be satisfied by the existing system for the training of cadres for groups of specialities, for particular specialties, and in some cases for specializations (block 13). During this process the "white spots" are identified--i.e., the regions (for each specialty) are identified which cannot be provided with specialists having higher education by using only the possibilities of the existing educational system (block 19). The decisions are repeated for all republics or economic regions and for the branches of the economy.

Subsequently, the questions are settled about providing specialists to the "white spots" by reorganizing the existing vuzes (the departments or instructional programs) or by creating new ones. For this purpose, the variants in the qualitative structure of the distribution of specialists training are first formalized; this consists of establishing the feasibility of training specialists in a given specialty for other republics and economic regions, or of limiting oneself to meeting the needs arising in the given republic or economic region. In both cases the cycle is repeated for the entire roster of specialties (blocks 20-24).

If the decision is made to train specialists of a given type within the boundaries of a given economic region (or republic), then a plan for the reorganization or improvement of the educational system in this region is drawn up, and after an appropriate inquiry a decision is taken about the preservation or reorganization (change in the orientation of the specialization) of programs, departments, etc. (block 26).

If the decision is made to train specialists of a particular specialty for other republics or economic regions, then an analysis is made of the feasibility of a particular way of doing it, and the possibilities are estimated that the vuzes of the given region can cope with the task newly presented to them. The estimate is made for all the specialties which the vuzes located in the given region are capable of training. The result is a list of variants of recommendations. The possibility of effecting these recommendations is verified by a comparison with the instructional and material-technical resources on hand in the vuzes (blocks 30-31).

If the existing staff of the vuzes in the region does not permit implementation of the recommendations that have been made, then recommendations are drawn up for the reorganization of a number of instructional programs (orientation to the training of a new type of specialist) or for the creation of a new vuz (blocks 36, 35 [sic]). This gives rise to the necessity of refining the nomenclature of specialties and drawing up recommendations for the retraining of instructors for the prospective new specialties, taking into account the development of the branches of the economy. As a result, a variant of the plan is formulated which considers the possibility of a reorganization of the existing system of higher education.

The formation of the plans, however, is still not complete. There are regions which need specialists as a consequence of the action, primarily, of social factors. In this case, an appraisal is made of the feasibility of creating a new vuz to offer the set of specialties which are necessary for dealing with the problem of raising the general cultural level of the region's population.

Decisions about the most likely centers for the training of specialists are made on the basis of a forecast of the distribution of productive forces in the nation during the long-range period of time in question. Possibilities for the educational system already in existence as well as for its reorganization (improvement) and development are considered among the variants thus arrived at. However, they may prove to be unsatisfactory in the sense that they require expenditures for carrying out the plan that has been drawn up (block 49). A calculation is made for all the feasible variants for satisfying the basic limits.[3]

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[3]The paper ends at this point. It should be noted that there are no references in it to blocks 11, 12, 14-18, 25, 27-29, 32-34, or 37-48.--Ed.

MANPOWER FORECASTING FOR WORK AND FOR SOCIETY

Lyman A. Glenny

College and university programs are related to both the well-being of society and the well-being of the individual. The first of these relationships is reflected in the current preoccupation in the U. S. and most Western nations with economic productivity and with training persons for the manpower needs of industry, business, and government. This train of thought has recently been dominant in public policy and educational policy as well, in curriculum changes, and in the counseling of young people into educational programs and services. The second relationship -- of education to the well-being of the individual -- places less emphasis on the economic returns of education than on the subtle, intangible elements that contribute to personal satisfaction and happiness and to greater equity in self-esteem among various classes of people. These desirable personal and social results are said to derive from having persons who are more broadly educated rather than from having persons who are trained for specific differentiated jobs.

Particularly since 1960, training of skilled manpower for technical and professional positions has tended to dominate federal, state, and local policy in funding higher education programs. Other educational programs -- general education and the liberal arts, the major function of higher education for most of the century from 1840 to 1940 -- gave way to an almost exclusive concern for manpower training to improve the efficiency and productivity of the national economy.

The three dimensions of the response to manpower needs in this economic sense relate to: (1) projections of employment, (2) manpower forecasts and their validity, and (3) educational programming by the colleges and universities. Each dimension presents such serious problems, and each appears so fraught with uncertainty, that many manpower specialists as well as educators claim that they cannot be acted on in a democratic society with a relatively free market system. An examination of each of these three dimensions reveals something of the dilemma which our nation faces.

Employment Projections

With industrial and governmental employees at all levels operating more or less freely within the competitive marketplace, the task of ascertaining the plans or intents of each individual enterprise or service to expand or contract its manpower requirements

poses a problem of monumental proportions. Moreover, general estimates of how many persons will be employed at a given time in the future help very little in planning to meet needs until the estimates are broken down by the thousands of work classifications characteristic of advanced industrial nations. The more dynamic the growth and changes in the economy, the greater the difficulty becomes for assessing accurately the specific employment opportunities which will arise. The interactions of competitive enterprises with each other further increase the complexities in such a process. When the attempt is made to assess the effects of federal government policies in foreign relations, health, welfare, education, energy production, and other forms of social service, and then to add the policies of the 50 state governments and the thousands of local governments, the impact of these policies on employment and manpower forecasting tends to defy human comprehension.

The uncertainties surrounding employment needs have become increasingly evident in the past five to seven years. The baby boom following World War II produced students entering college in the 1960's, creating a plethora of college-trained and educated persons for a job market which is expanding at less than the tremendous rate of increase of college graduates. During the ten-year period from 1961-62 to 1971-72, the number of bachelor's and first-professional degrees conferred increased by 120 percent -- from 417,846 to 921,000. The number of master's degrees conferred increased by 180 percent, and the number of doctorates by 187 percent (American Council on Education, 1975).

During the latter part of that same decade, the job market tightened; federal expenditures for research and development were sharply curtailed; and the long-term shortage of elementary- and secondary-school teachers finally came to an end. As the number of persons graduating from college continued to grow and the economic situation began to deteriorate in the early 1970's, employment prospects for all college graduates were adversely affected but particularly the prospects for recent graduates. Moreover, another 15 million college graduates are expected to enter the labor force between now and 1985 -- about 800,000 more than the number of projected job openings (American Council on Education, 1975).

This oversupply of persons for the employment market comes at the same time as a recession in the general economy of this and many other industrialized nations. The immediate impact of the growth in numbers of graduates on the individual person can be measured by the income of college graduates compared with the income of persons without a degree. A recent study showed that the earnings differential between college and high-school graduates was reduced by 31 percent between 1970 and 1972 (American Council on Education, 1975). Nevertheless, college graduates have an easier time than the less-educated in finding employment.

According to the U.S. Bureau of Labor Statistics, the unemployment rate in March, 1974, was about ten percent for those with less than three years of high school, about five percent for high-school graduates, and only two percent for college graduates. The situation was less favorable for the most recent college graduates, who had a five percent unemployment rate (American Council on Education, 1975). Thus, entry into the labor market is highly dependent upon whether the economy declines or improves.

There are great controversies over employment and manpower projections: Is their reliability sufficient to justify their use for university program planning? Does not student demand for particular programs provide a surer guide for shaping the university curriculum? In the U.S., the student-demand approach has prevailed -- that is to say, colleges and universities offered programs assumed to be useful to students and desired by them. While faculties have often pressed their own conceptions of what the real needs of students were upon these students, the American system of higher education has in general been oriented to the student market since the beginning of the 20th century. However, controversy has arisen over the desirability of continuing to use the student-demand approach, or of using employment and manpower projections instead, to determine the amount and kind of education and training to be offered as well as the number of persons to be allowed to enter particular programs.

In a seminar sponsored by the Policy Analysis Service of the American Council on Education in 1974, on the relationship of employment and manpower forecasting to planning in higher education, a number of experts from both the federal government and the universities laid bare their concerns. T. Edward Hollander, deputy commissioner for higher and professional education in New York State, focused on the weaknesses of the four assumptions that underlie curriculum planning based on manpower projections rather than on student demand:

(1) It is assumed that the educational planner has a clearer vision of the future than the students. Actually, he argued, the factors influencing the job market are too complex and erratic for anyone to grasp completely and to plan accordingly.

(2) The assumption that the educational planner has a mechanism for shifting the allocation of educational resources to meet changing labor-market demands is also questionable. For example, because of the many jurisdictions involved and the autonomy of university faculties, it is often nearly impossible to eliminate a well entrenched program.

(3) The assumption that employment opportunities are independent of the size and scope of educational programs is false. The number

of graduates from education programs inevitably influences the job market; e.g., the latest crop of graduates in history could not be absorbed by academic institutions, but many job opportunities for history majors opened up outside those institutions.

(4) The assumption that career levels are established independent of federal or state policy is erroneous. The reverse is true: Educational programs are affected by government policies that regulate career levels through such devices as licensing and certifying teachers, dentists, accountants, and other professionals. Hollander concludes that student choice or demand should be the barometer for program planning, claiming it is fruitless to rely on predictions of the job market except in certain narrow specializations (American Council on Education, 1975).

Spokesmen for industry argue that employment projections can be useful and even essential tools in developing education policies as long as they are cautiously treated as broad guidelines and not as absolutes. They say that problems arising out of employment projections are bound to be short-lived and quickly dissolved, since projections can change drastically within a decade. A major variable is the change in national priorities as reflected in federal spending. In the early 1960's, when the federal government was allocating $5 billion a year for research and development in space programs, curriculum planning was heavily influenced by the projected shortage of scientists; in the 1970's, the $2 billion drop in research and development spending led to concomitant revisions in curriculum planning.

On the other hand, proponents of the student-demand approach argue that the nation can more easily alter the number of its college graduates and programs than it can alter the number of positions traditionally defined as jobs for college graduates. The trend toward more education and more graduates is not matched by corresponding growth in the number of job openings requiring college-educated persons. Moreover, those graduates who fail to find jobs completely commensurate with their training do not simply vanish; they look for compatible though perhaps lower-status jobs in other areas. For instance, because of the decrease in teaching jobs, women now pursue nursing and other technical positions in the health fields. Thus, the oversupply in one field tends to spread to other fields that require a college degree -- and also to swell the ranks of graduates in such occupational categories as clerical, sales, and other services. Frank Newman, president of the University of Rhode Island, has predicted that the rate of such "underemployment" among college graduates will increase, and that emphasis in the criteria for hiring will shift from educational credentials and degrees to a display or proof of actual performance. This shift may prove to be a more effective way to handle the problem of oversupply than the imposition of arbitrary governmental restrictions or the upgrading of positions to match increases in the number of

college graduates. Further, Newman states that it is likely to be more dangerous to allow the government to manipulate the production of graduates based on political considerations than to leave the choices up to the students and their individual assessments of employment opportunities. He does suggest that the government could do much more to inform potential students of possible employment opportunities (American Council on Education, 1975).

Manpower Forecasts

Freeman and Breneman (1974) state that it is important to raise a "basic question about forecasting: its potential value or lack of value in a free labor market, where individual decisions, not centralized plans, determine numbers of persons and remuneration in various vocations" (p. 15). They present six of the reasons for preparing manpower forecasts and comment upon them as follows (pp. 15-18):

> Reason 1. Forecasts are needed as part of a manpower planning system to balance supplies and demands because individual decisions--especially career decisions--do not reflect economic reality. This justification of forecasting is based on an incorrect perception of individual behavior in the market. Contrary to the "planning perspective," students and other decision-makers are highly responsive to market opportunities, and they can be expected, over the long haul, to keep markets at or near equilibrium. As the post-Sputnik increase in doctorate specialists should make clear, a free labor market is extremely adept at changing the number of highly trained workers when demands change.
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> Reason 2. Forecasts provide important information to guidance counselors, enabling them to aid students in career planning. The principal difficulty with this justification, which underlies Bureau of Labor Statistics (BLS) occupational outlook forecasts, is that students tend to ignore formal guidance as a way of learning about the market. Direct observations, obtained by summer or part-time jobs, older friends, or professors are far more important information channels than career counseling.
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> Reason 3. Forecasts can serve as an early warning system, directing attention to the unforeseen consequences of current market responses and development. . . . An important "warning device" function of even crude forecasts is to point out possible incompatibilities in trend rates of change, incompatibilities that might otherwise be extrapolated into the future by decision-makers. The impossibility of continued high exponential growth of college enrollments, and the potential incompatibility between trend increases in

undergraduate demands for faculty and in the supply of doctorates, are cases in point....

Reason 4. Forecasts are needed to advise educators on the number of slots to be offered in college courses and thus determine the supply of new specialists. While forecasts may be of some value in university planning, the evidence of the 1950-1970 decades is that colleges and universities are highly responsive to market needs, as reflected particularly in student educational demands. For the most part, the supply of openings in universities is sufficiently flexible to permit substantial changes in graduates without centralized planning or forecasting....

Reasons 5. Forecasts are needed to evaluate the potential effect of large-scale governmental programs on the market. ... Forecasts are a necessary and potentially invaluable policy tool. Whether one likes or dislikes the visible hand of government in doctorate and related markets, the hand exists and should be guided by knowledge of how it influences market outcomes. The long lead time in producing Ph.D.'s, which makes tomorrow's market depend on today's decisions, requires contingent forecasts -- estimates of how the future depends on today's policy alternatives.

Reason 6. Forecasts are a useful device for organizing and analyzing information about market phenomena that are taken as given by individual decision-makers. In a competitive market, where individual actions do not alter outcomes, marketwide phenomena fall outside the responsibility of participants, necessitating outside analysis. The effects of broad economic or demographic changes, for example, on demand for college training are not the concern of a single university; these are clearly critical, however, to the entire higher educational system and should be so examined. While many forecasts view data organization and analysis of current conditions as secondary, these steps often constitute their major contribution.

Freeman and Breneman sum up the above reasons for estimating manpower and employment requirements by stating (p. 18) that three areas of validity survive:

First, and most importantly, as a tool for evaluating governmental policies; second, as an early warning system which may reduce adjustment problems; and third, as an information or diagnostic device to direct attention to market problems beyond the purview of individual decision-makers.

In further support of the student-demand approach to the development of university programs, the data showing enrollment shifts among programs during recent years indicate the responsiveness of colleges and universities to the demand. The U.S. Census Bureau reported in February, 1976, that during the period from 1966 to 1974 vast changes had taken place in enrollments among various college-level disciplines or programs. For example, enrollments in the physical sciences dropped by more than 40 percent and those in mathematics and statistics by almost 30 percent; engineering enrollments declined by 23 percent. During the same eight-year period, enrollments in the biological/health sciences increased by 33 percent, in forestry and agriculture by 42 percent, and in the social sciences by 20 percent.

Even in a shorter time period, the two years between 1972 and 1974, changes were also great and in some cases -- presumably in response to the labor market -- moved in directions opposite to the trends of the entire eight-year period. For example, in those two years, engineering enrollments went up almost 15 percent (as opposed to the decline of 23 percent in the eight-year period), while social-science enrollments dropped by 19 percent as opposed to the increase of 20 percent in the eight years (U.S. Department of Commerce, 1976, Table A, p. 1). These remarkable adjustments to changes in demand provide some support for the assumption that education programs can be changed more readily than can the employment market.

One reason that forecasts of employment and manpower needs have limited usefulness in a free-market economy is that the enormous number of variables involved is conducive to a lack of agreement among the major governmental agencies that make the forecasts. The two most distinguished agencies for estimating needs in the highly professionalized fields which require a doctor's degree are the National Science Foundation (NSF) and the Bureau of Labor Statistics (BLS). Yet their projections of manpower production and requirements differ substantially -- enough so that the results, if applied to academic programs by a university planner, would call for very different internal allocations of human and financial resources. Both agencies have projected demand and supply at the doctorate level for 1985, and the abbreviated table below shows something of the problem faced by the planner who wishes to use the data.

Table 1

Estimates by the National Science Foundation and the Bureau of Labor Statistics of Employment Prospects for Ph.D.'s in 1985

Field	National Science Foundation		Bureau of Labor Statistics	
	Number of "surplus" Ph.D.'s	Percent surplus	Number of "surplus" Ph.D.'s	Percent surplus
Physical sciences	9,200	10.8	27,000	22.7
Engineering	18,300	28.9	21,000	26.2
Mathematics	5,600	25.9	11,600	36.9
Life sciences	7,100	7.7	64,600	46.9
Social sciences	41,700	37.0	66,600	43.3

Gina Kolata (1976), after analyzing and commenting on these differences, concludes (p. 365):

> ...if for no reason other than to oil the machinery of bureaucratic decision-making, there is a demand for projections such as those made by the NSF and BLS. The glaring differences between the two reports may, then, serve the useful purpose of exposing the projections for what they are, thereby leading users of the projections to look more closely at the underlying assumptions of the models. This may discourage users from placing blind faith in the numbers.

Surpluses of skilled personnel in some fields have often been preceded by shortages in the same fields. Entering students do seem to respond to market needs for labor specialties, but four or more years later, when they have earned their degrees, the labor shortage in their specialty may have turned into a labor surplus. The hardship in adjusting to the labor market falls upon the individual first and society only second.

For over ten years, the U.S. Department of Labor has been indicating that only about 20 percent of the total work force are in positions that require a college education. For most other positions, a high-school education followed by short courses or on-the-job training apparently constitutes sufficient work preparation. Nevertheless, the number of graduates from colleges and universities continues to rise, so that the ratio of graduates to the number of jobs of the types they have traditionally held

increases steadily. The result is that graduates are forced into lower-level occupations formerly held by persons without college training. The graduate has a job, but not one at the level aspired to when taking the degree. At the same time, persons without degrees are forced into even lower-status jobs, and those they displace go lower still. This seems destined to be the result if the market approach continues to prevail. Some analysts indicate that if colleges and universities would recognize that only 20 percent of the jobs require a college education, they would turn their attention to preparing technologists with one or two years of training, changing entirely the character of most colleges and universities.

Meanwhile, surpluses in many occupational specializations will be with us for another ten years or more. After that, shortages will probably appear because of fluctuations resulting from student demand, and because the number of young people of college age will enter a decline starting in 1980 and lasting 15 years or more. Between 1980 and 1993, the number of young people in the traditional college-age cohort (18 to 22 years old) will drop by about 23 percent. Planning for programs with a scarcity of young people (and a large aging population) will probably present much more severe difficulties than at present; when the economy has a surplus of educated and skilled workers.

Still another problem in developing a manpower policy is that there are competing policy objectives. The states have legal responsibility for providing education, but the federal government intercedes at times not only to stimulate the training of needed manpower -- as it did during World War II and in the post-sputnik period -- but also to help students who have insufficient financial ability to enroll in college. Indeed, some policy analysts insist that it is the federal government's primary educational responsibility to assure, through financial assistance programs, that no qualified student is barred from pursuing higher education because of lack of funds. Further, they say the federal government should try to ensure that students have the opportunity to attend the particular college of their choice.

Although the difference between the income received by a high-school graduate and that received by a college graduate is narrowing, it remains substantial enough to motivate many students to seek a college education. The Census Bureau has reported that, in 1975, the mean annual income of students who completed eight years of elementary school was $7,191; for those who had completed four years of high school, it was $10,701; while for those who had completed four years of college, it was $12,100, and for those who had gone beyond four years of college, $13,396. Moreover, minority ethnic groups and low-income families see a college degree as essential to upward mobility in income and social-class status. E. I. Holmstrom has reported a study which shows that more than half

of the students entering college in 1968 were from families in which neither the father nor the mother had attended college. Among those graduating four years later, almost half were still from these upward-striving families (Chronicle of Higher Education, 1976).

The federal emphasis in funding higher education continues to be upon aid directly to the students. While in the 1960's, aid was given to institutions, to initiate certain science and other programs, today the focus is predominantly on aid to students, to allow them to attend the college of their choice. The sums appropriated for this purpose run into the billions of dollars, although the government has still not provided funds in the amounts which its own studies indicate are necessary to achieve equality of opportunity for college entrance. The states have also shifted some funding away from direct appropriations to institutions in order to aid students in financial need. Many states maintain low tuition at their state institutions to promote greater equality of opportunity.

Because of labor-union activity and the fact that better-educated people are holding lower-status positions than formerly, the pay scales for upper- and lower-level work are tending to converge. Equal pay will not necessarily make for equal social status, but in an acquisitive society, where material wealth plays a large role in status placement, it would tend to have that effect. Ultimately, however, differences in status may come to be matters of differences in the level of education. But we are far from that situation yet, and it is not likely in the foreseeable future.

Educational Programming

Perhaps college and university planning for the future requires higher educational institutions to "educate for contingency." That is, programs should be broader in liberal-arts content, less specialized in occupational direction, and more capable of providing a flexible base from which a person may derive personal satisfaction and move into several different occupations over a lifetime. Good educational planning is continuous and subject to change as society, values, and aspirations change. Yet it must avoid the trap of assuming exact knowledge of the future manpower situation. If programs in universities are built in direct response to estimates of special manpower needs, trouble is bound to beset us.

National manpower priorities must be estimated and given wide publicity. The individual states must follow suit, making their future needs known while taking national priorities into consideration. Nevertheless, for college and university planning, students, faculty members, administrators, and public policymakers all need to become deeply involved in the development of education for contingency --

flexible academic and occupational programs that can change in mid-course to tangent or divergent directions. "Hyper-specialization" should give way to greater flexibility and adaptability. Ideally, the process of educational planning would start with reviews of national priorities, then of state and local priorities, and then go on to the dissemination to the institutional level of the data upon which the projections are based. There, program planning would take place. Only through such a system of educational planning can higher education develop broad core programs that permit students to move into different jobs in response to changing societal needs.

Whatever may be said of education as the basis for manpower "production" in the U.S., it also serves to prepare citizens to exercise their public rights and duties and to enjoy their lives. Thomas Jefferson, probably the most intellectual and scholarly of the founding fathers of the nation, realized that education was the key to ensuring that this country would be governed by a "natural aristocracy" of ability rather than of birth. Ewald Nyquist, commissioner of education for New York State, has said (Higher Education Daily, 1976):

> The "new vocationalism" that is so much in vogue today may help students get their first job after high school or college...[but] it is not going to provide them career satisfaction throughout life. That is one reason why career education must be combined with renaissance of the liberal arts. Education...has two purposes: One is to help each person to earn his bread and the other is to make each mouthful sweeter. Education is learning how to make a living but it is also learning how to live a life that is sensitive, creative, compassionate, and humane.

Clifton R. Wharton, president of Michigan State University, has pointed out that "academicians are often accused of self-interest" when they argue that a college education is an education for life, but they should not be deterred on that account (FYI, 1976).

Manpower for economic productivity does not predominate over liberal education in the minds of the educators cited above. Most influential public figures as well as educators would agree with the statement of John E. Corbally (1976), president of the University of Illinois, that it is wrong to assume that we have too many teachers, too many educated people, and that we must cut the supply to reflect the demand.

> I challenge those conclusions as false--both as they relate to the purposes of higher education and as they relate to the needs of our society. It has never been my understanding that universities . . . operate in terms of manpower studies--that we are to let in one freshman for each vacancy which will occur four years hence. I have never assumed that the

> graduate in accounting who becomes a personnel manager, the graduate in English who becomes a banker, or even the Ph.D. in philosophy who becomes a sheriff represents a failure of the institution or of the graduate. . . . the pattern of higher education in a democratic society is based upon our primary need for an educated citizenry and only secondarily upon specific job or career-placement goals. You are not failures, you have not wasted society's tax money, you are not misfits simply because your careers may not match your university majors, and you should not demean yourselves nor permit anyone else to demean you or your university education on vocational grounds. The basic question is, "Are you better prepared today to be an educated, participating citizen than you were when you entered [the university]? . . .If the answer is "Yes" your work . . . has been successful; if the answer is "No" your work . . . has not been successful--and neither answer has naything to do with your job. The answer relates to your life--your whole life. (pp. 4-5)

Both the flexibility that will be required of every college graduate and the economic needs of society are largely served by preserving, in the core of professional and occupational training, the humanism of education, allowed the educated individual to adapt to a wide variety of opportunities, duties, and satisfying personal experiences.

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SUMMARY OF THE DISCUSSION AT THE SCIENTIFIC-RESEARCH INSTITUTE FOR PROBLEMS OF HIGHER EDUCATION MOSCOW, U.S.S.R. October 4-6, 1976

Present during all or part of the discussions:

The members of the U. S. delegation
The members of the Soviet delegation
Boris Andropov, deputy director of the Department of Education and Culture, State Planning Commission
Kuzovchikova [first name and affiliation unknown]

October 4, Morning Session

Following welcoming remarks, expressions of pleasure at the resumption of the seminar, and introductions of the participants, Chetverikov summarized his paper and also gave a brief description of the Scientific-Research Institute on Problems of Higher Education (NIIVSh). Founded in 1973, NIIVSh is an agency of the Ministry of Higher and Secondary Specialized Education (Minvuz), which provides it with all its support. Its primary function is to coordinate research activities in the area of higher and secondary specialized education that are being carried out in about 250 vuzes in the Soviet Union. These activities are jointly planned by NIIVSh and the vuzes, and an overall five-year plan is then submitted to Minvuz for approval. The major problem areas in which NIIVSh has been working are: learning and the Communist upbringing of students in higher and secondary specialized educational institutions; administration of higher education and scientific research and the economics and forecasting of development in higher and secondary specialized education; and the utilization of scientific and technological information in the system of higher and secondary specialized education. NIIVSh also performs functions in information dissemination and international contacts.

Turnbull gave a brief description of ETS. Research in higher education is much less centralized in the U. S. than it is in the U. S. S. R., and ETS is only one of many organizations engaged in it. It is a private organization, not operated for profit and not associated with any governmental body. Its major operational activity is the preparation and administration of examinations to measure the readiness of students to undertake the next step in an educational process. The decision on whether to use an ETS examination or some other examination, or none, rests with each educational institution. But ETS also does a

great deal of research and development at all levels of education, of both a basic and an applied nature. Some of this research is concerned with the individual characteristics of people that affect their learning, and some of it with the effectiveness of instructional methods, programs of study, and modes of educational organization. Some support comes from government agencies, for particular studies, but a substantial amount comes from non-governmental sources such as the foundations.

The U. S. participants asked for more information about several topics that Chetverikov had mentioned in his paper.

The Znanie Society. It was established in the 1950's, with the mission of popularizing knowledge. Every organization where knowledge is being developed has a unit of the Society. Members of the organization may join; their obligations are to pay small dues and to contribute to the dissemination of knowledge in their field. The Society organizes courses for the People's Universities and it also arranges for displays and exhibitions. It sponsors the Polytechnical Museum in Moscow, which has a Department of Advanced Studies in Educational Methods, where NIIVSh staff members occasionally lecture. The Society pays a fee to those who lecture or prepare materials on its behalf.

People's Universities. No qualifications are required for entry. These Universities do not issue certificates or other credentials, and attendance at one confers no privileges but is taken into account when, for example, a person is beginning a new job. The faculties consist of outstanding scientists and leaders in industry, all experts in their field.

Relationship between the jobs and the academic work of part-time students. A variety of relationships are possible. In most cases, students are working in a field closely related to the one they are studying; most of them, during their first few years of study, change jobs to one that is even closer to the one they are studying. Some people are studying to receive advanced technical training in the job they already have. At large enterprises, there are special councils of volunteers, known as "Good Offices Committees," who follow the progress of part-time students and help them deal with their problems.

Problems of multilingual instruction. No vuz, of course, can offer instruction in all 123 languages of the U.S.S.R. However, in every Soviet republic, there are some universities where instruction is in the language of the republic. At vuzes such as Moscow University, instruction is in Russian, but every secondary school offers Russian as a second language if not as the language of instruction, so all students should know Russian by the time they apply to a vuz. At many vuzes, instruction is carried on both in Russian and in the native language. NIIVSh does not have data about the number of applicants to, or students

in, the various vuzes who are from secondary schools where Russian was not the language of instruction, but the vuzes themselves do and they will be requested to have the information ready when the U. S. group arrives.

October 4, Afternoon Session

When Cross had summarized her paper, Poltev pointed out that "correspondence" education was established a long time ago in the Soviet Union and is considered a "traditional" form of higher education. Cross responded that correspondence study in the U. S. goes back to 1895 but that the term "non-traditional" does not have the same meaning as what is evidently called "new forms" of higher education in the U. S. S. R. For example, it has always been possible for adults to go to college; what is "non-traditional" is the publicity, visibility, and flexibility of recent efforts to recruit adult part-time learners.

Zakharov asked how institutions which required no entrance examinations were able to identify their most gifted students. Cross replied that these institutions deliberately avoid prejudging the student's capacity to achieve; they will admit any student to give him a chance to find out what his capacity is. One result is a high dropout rate, but these colleges believe that is a price worth paying to give students a fair chance. Ultimately, the proof of a student's ability is whether he is able to pass his courses.

There was some discussion of whether the People's Universities played a role in Soviet higher education similar to that played by the community colleges in the U. S. The consensus was that they did not: People's Universities were outside the formal hierarchy of formal education, they offered no credentials, and students could not transfer from them to the vuzes. The more nearly comparable institution in the U. S. is the adult-education school, and there is apparently no institution in the U. S. S. R. comparable to the community college.

Kuznetsov referred to the statement, in Cross' paper, that "non-traditional education is student-centered, as distinct from being faculty-centered or institution-centered." Student-centered teaching, he argued, should characterize all of higher education. "We must develop an individualized approach in our teaching." Because of the special difficulties in non-traditional forms of education, instructional technology has been applied there as a kind of testing ground, but it needs to be applied in traditional forms as well. Cross replied that there is indeed "room for a great deal of that kind of transfer." However, she added, individualized education is not all that is meant by "student-centered." The traditional vuz has said, "Come to our location, for the content we offer, under the conditions of admission that

we've established, to learn by the lecture method." Non-traditionalists argue that the location and time of learning should be convenient to the students, and that the students should have a voice in determining the content of their education and the ways in which their competencies are to be measured; these views are also part of the "student-centered" approach.

Gudkov pointed out that, in Soviet higher education, there is a program of study, with strictly outlined requirements, for each field of specialization, and he asked whether there is anything comparable in the U. S. Cross said that the requirements for a field of study are usually established by the faculty of each vuz, and there is much variation. However, requirements are being given less and less emphasis; students are being permitted to choose from among a large range of courses. The extreme of this, usually applied to adult students, is that the student makes his own program of study, on the ground that he has had enough experience to know what he needs. A faculty member or committee may have to approve the program as being one that meets the broad aims of the institution, but the student is given very wide latitude.

Kudryavtsev commented that the concept of an "active learner" is especially important in part-time education, because there is less possibility of control by an instructor. There is little scientific research or theory that showed how the learner's activity could be stimulated, but experience indicates that "problem-centered teaching" is an effective device. The role of the teacher in part-time learning is "to organize and guide the learning process, to give the student advice, to develop in the student the ability to learn by himself, and to develop an aspiration in the student to learn the methods of learning." Students -- full-time as well as part-time -- need to learn the importance of organizing their time scientifically. Turnbull said he and others in the U. S. shared many of these views; he raised the question, however, of whether the concept of an "active learner" did not imply that the learner should play an active part in "posing the problems for his own education"--i.e., helping to determine his program of study and his particular pedagogical sequence. Because of the basic philosophical agreement about the importance of an active learner, this might be a good area for a joint examination of theory and practice: What is the ideal educational design for bringing about efficiency in learning with optimum participation by student and teacher? What techniques have been most effective in promoting a student-centered rather than a faculty-centered approach? What are the limits to the application of these techniques?

October 5, Morning Session

Gudkov described the National Polytechnical Extramural Institute, of which he had been deputy director for two years. The Institute's aim is to offer students an opportunity to earn, without having to leave their jobs, a degree which is the full equivalent of one earned in regular full-time education. These students must be working in the field in which they want to study. The Institute also offers refresher courses for engineers who already have their degree. Since its founding nearly half a century ago, the institute has trained more than 50,000 engineers. It currently enrolls 36,000 extramural students and 4,000 evening students, who can receive training in more than 60 specialties. It has branches, consultation points, and other kinds of centers located in various areas. Instruction uses a combination of group work and individual work, the latter taking into account the student's ability, place of residence, working conditions, interests, etc. Students engage in studies at home, using textbooks specially prepared by the Institute. They also have instruction by television; special laboratory and examination sessions are arranged for them; and they have schedules of lectures and other activities at large enterprises as well as in the larger cities. Programmed instruction and evaluation are also used. Student scientific conferences are held annually. Research has shown that students spend an average of 18 hours a week on their studies.

Students have a period of residence at the Institute of 30 to 40 days each year, during which they prepare for and take their examinations. In the final stage of their education, they are given paid leave from work while they engage in study full-time, preparing their degree projects. These projects have been displayed at the National Economic Exhibition, and the Institute has received letters from factories saying that students' degree projects have been put into production.

Great emphasis is placed on consultations between instructors and students. Some consultations are scheduled, and students also know when and where instructors will be available for additional consultations. Consultations may be in written or oral form, and they may take place at the main campus or at the institute's branches.

The name of the institute which Gudkov was describing had been translated as the National Polytechnical Correspondence (Zaochnyi) Institute, but the description led Spurr to remark that its instructional methods were much more varied than what is usually associated with the term "correspondence education" in the U. S. Poltev described what is meant by zaochnyi education in the U. S. S. R. in general. Each student enrolled in a zaochnyi program is assigned to a specially designated person, who helps prepare an individual chart for the student, showing a planned sequence of courses, the methods of study to be used, the tests

to be taken, etc. Students receive textbooks from the library, and they receive instructional material principally by mail. But they may also watch instructional television programs specially made by their institute; this may be done at home or in small groups, with or without an instructor, at the institute, at its consultation points, or in rooms set up for this purpose at enterprises. Students complete assignments at home and then either mail them to the institute or bring them in if they do not live too far away. At the end of the year, the student is granted a 30- or 40-day leave, at full pay, to prepare for final examinations and to do the necessary laboratory work. (Evening students are required, in addition, to attend classes for 16 hours a week.) In the sixth year of the program, the student is given a one-month leave, again at full pay, during which he does his "practical work" [i.e., gets work experience at the job for which he is studying--ed.] and selects the subject for his degree project. Then he gets a four-month leave, at full pay, to do his degree project, which is generally about 200 or 250 pages long, with 12 or 14 technical drawings--the same kind of project that full-time students do. The project is examined by a state commission, chaired by a person who is chosen by the appropriate ministry and is not on the staff of the institute. In short, the zaochnyi student meets all the requirements made of a student in full-time day education, and the degree he receives is the full equivalent of the degree received by day students. On the basis of these remarks, Feldmesser suggested that zaochnyi be translated not as "correspondence" but as "extramural."

U. S. participants asked what had been found about the relative advantages of part-time and full-time education. If the extramural degree was fully equivalent to the regular degree, why wasn't all higher education conducted in the extramural form? Did full-time education have any unique role? Were there any intrinsic values in part-time education, or was it merely expeditious as long as there were not adequate facilities to give everyone a full-time education? What were the factors which determined whether a student entered a full-time, extramural, or evening program?

Several replies were made. First, there are some specialties in which extramural training is impossible, because they demand mastery of a great deal of theoretical material, a lot of laboratory work, or performances which have to be observed; thus, there are no extramural programs for physicians, chemical technologists, or musicians. There are about 450 occupations for which training is provided in Soviet vuzes, but there are extramural programs for only about 255 of them.

As to the kinds of students who enrolled in extramural programs, Gudkov said that about 30 percent of students entering his Institute are graduates of a secondary specialized school; about 25 to 30 percent have completed a comprehensive secondary school and perhaps

have had brief work experience; and the rest are people who have been employed for some time. The main motive in most cases is improved income or better job performance. Recently, however, there has been an increasing number of people seeking a second degree--for example, people with candidate degrees in technical sciences who enroll in an engineering program, or engineers who want degrees as economists so that they can go into management. Poltev added that, of the 1,000,000 students admitted to vuzes at the start of the 1976-77 year, about 130,000-140,000 entered evening programs and 270,000 extramural programs. Total vuz enrollment this year is about 4,850,000, of whom about 640,000 are evening students and 1,600,000 extramural students. In reply to a question about proportions of women in part-time and full-time education, it was said that the proportion varied with the field rather than with the form of education; in the National Polytechnical Extramural Institute, the highest proportions of women were in the fields concerned with economics.

Finally, Kuznetsov and others said that part-time education is more difficult for the student; it requires "self-discipline and courage." In general, full-time education is a more reliable way of training specialists. Enrollment plans call for an increase in the proportion of students enrolled in full-time programs; the absolute number of students enrolled in part-time higher education is not to decrease, but its proportion of the total student body in higher education will decline to about 35 or 40 percent by 1980 or 1985. Poltev, however, argued that the quality of graduates of part-time programs was equal to that of graduates of full-time programs. Feldmesser asked whether any research had been done on the relative competence of people trained in the same specialty by different methods; the answer was that research of that kind was currently being done by NIIVSh and would be published in the near future.

Spurr pointed out that there were analogies in the U. S. to the Soviet form of extramural education. For example, the University of Michigan offers courses to employees of General Motors and Ford. The companies set up classrooms in the factories and give released time from work to employees who enroll in the courses. Classes are sometimes taught by professors who come to the factory and sometimes by closed-circuit television with two-way audio, and there are both day and evening programs. In every major city of the state, there are centers where advisors are available on a certain schedule. Various combinations of these courses can lead to a degree which is of equal value with the conventional degree. While this is most common in the technical fields and in business administration, there are similar programs by which elementary- and secondary-school teachers can earn advanced degrees.

Zakharov described the National Railway Engineering Extramural Institute, of which he was rector. It is the main

institute in its field and a methodology center for extramural education in railway engineering. In the 25 years of its existence, it has trained about 20,000 engineers. Currently, 53,000 students are enrolled; many of them are receiving a second higher education in fields such as computer science, automated data processing of economic information, automated administrative systems, radiolocating systems, etc. Admissions are competitive; for every opening in the 1976-77 year, the Institute had 2.7 applicants, and 1.82 applicants who passed the entrance examinations, so the Institute has a student body of high quality. Nevertheless, part-time study is difficult, and the dropout rate is 10-12 percent a year. The Institute tries to reduce this rate by providing students with material and moral support at their place of work; by involving them in research work and in production innovations; by stimulating their participation in various national contests, etc. During the five years of the extramural course of study, students receive a total of 280 days of paid leave, as well as 90-100 days of regular trade-union leave. Half of a student's travel costs for study are paid, and students have a permanent pass for railway travel.

The study plans (uchebnye plany) for extramural students are very similar to those for full-time students, and the curricula (uchebnye programmy) are identical. The "theoretical training of part-time students is weaker," but these students are not expected "to make great scientific discoveries." They are expected to become leaders and managers in the transport industry. About a quarter of the students are holding jobs as engineers when they enter the Institute, even though they may be qualified only as technicians. However, last year, for example, 73 percent of the graduates took positions as supervising engineers--jobs which graduates of full-time educational institutions usually get only after five to seven years of experience. It must also be said that not all graduates of full-time institutions are willing to take jobs in small railway junctions or places where the climate may not be very favorable.

As a methodology center, the Institute prepares all the study plans, methodological materials, and other literature needed by extramural students in railway engineering. It distributes 900 titles every year, with a total circulation of 2,500,000; it has its own printing plant for this purpose. It also has a pool of laboratory railway cars, which each year visit 125 consultation points in the European part of the U. S. S. R. To further stimulate active participation, the Institute has mock-ups, models, simulations, and similar devices, many of them made by the students themselves.

Turnbull asked how Soviet higher education dealt with the problem of "moving a theoretical development in instruction into wide application in teaching practice." Poltev said this was also a problem in the Soviet Union: "We try various means of dealing

with it--there are carrots and sticks." Serova said that experimental courses are developed on the basis of research; after these courses have been tried, recommendations are made to the appropriate ministry.

Spurr said that, in the U. S., initial professional training was usually full-time and tended to be relatively theoretical, whereas mid-career training was more likely to be part-time and oriented toward problem-solving. Was there a similar tendency in the Soviet Union? The reply was a description, by several Soviet participants, of a system for the re-training of vuz faculty members. Every faculty member is required to take refresher courses for four months every five years; during this time he is paid his usual salary. These courses are meant to improve both knowledge of subject matter and teaching skills; among other things, they are used as an opportunity for communicating new developments in instructional theory and method. The courses are organized and taught by faculty members at leading institutes. Those who cannot be "re-trained" by others because they are themselves the leading scientists in their field spend an equivalent amount of time at a research institute. Every faculty position is subject to re-appointment every five years, so the faculty member who neglects this re-training program might not be re-appointed. Zakharov said that refusals to re-appoint occurred two or three times a year at his Institute.

October 5, Afternoon Session

Kuzovchikova described changes that had recently occurred, or that were being contemplated, in extramural and evening programs. Many more of the students in these programs have now graduated from a secondary specialized school or from a vuz; in some extramural institutes, they constitute 80 percent of the students. The needs of these students are different from the needs of others. The normal five- or six-year program can be reduced by one year for those who have a secondary specialized education and by two or three years for those with a higher education. But some students may not have an immediate need for a complete higher education; they may want to learn about a limited range of subjects in depth, or they may want to learn subjects unconnected with their job. One idea is to split the educational process into several parts, and permit students to study each part as they need it or want it. Some students may be admitted without entrance examinations and be permitted to obtain a higher education by completing some combination of courses. Still another idea is to divide training for a specialty into separate topics in such a way that a student completing one or two of these topics can immediately apply his knowledge in practice. For example, in the specialty of industrial construction there will be these topics: (1) mathematics and mechanics, two years; (2) use of computers for calculation and management, one year; (3) general principles of construction, one year; (4) building construction, one year; and (5) organization of

construction, one year. Students may begin their instruction with any one of the first three topics, but topic (1) must be completed before beginning topic (4). By studying topics (1) and (4), a student will be qualified for work in a design institute; completion of topics (2), (3), and (5) will qualify the student for a different kind of work. Instruction in separate courses could also be used for re-training or upgrading purposes.

Turnbull asked about provisions for students who drop out of higher education for health or academic reasons but return later on. Do they have to repeat their courses? Were they allowed to take additional time to complete their degree? Were the provisions different for full-time and part-time students? How many students in each type of higher education dropped out for academic reasons and how many for other reasons? The dropout rate from part-time vuzes was given as 10 to 12 percent annually, of whom about three or four percent were "permanent" dropouts. The dropout rate for full-time vuzes was given as six to eight percent [without further explanation--ed.]. Students in either full-time or part-time education may be granted an "academic leave" of up to one year. Students are also permitted to transfer to another institute without having to take entrance examinations, provided that they remain in the same field of study; however, transfers are not permitted in the last year of study or, depending on the type of vuz, in the first two or three years of study. The student who wants to transfer must have the approval of the rectors of both the vuz he was attending and the one he wants to attend. Students sometimes have to transfer from full-time to part-time vuzes for financial reasons, since the stipend at a full-time institution might not be sufficient support in cases of, say, a parent's death. In a typical year, about three or four percent of the total student body in higher education transfer from one type of vuz to another.

Spurr said that dropout rates in American vuzes vary widely: They are very low at highly selective universities, while at less selective institutions perhaps half of the students who enter receive their degrees four years later. Poltev commented: "That's quite understandable; those who are easy to find are easy to lose." But U. S. participants said that supporters of open-admissions institutions believe that these institutions actually "saved" a number of students who compile good records but who might have been "lost" if they had had to take entrance examinations; that a year or two of higher education is not necessarily a "loss," for that amount may be of considerable benefit to the student and to society; and that the term "stopout" is gaining currency as a replacement for "dropout," to indicate that the student who leaves college has the option of starting again some time later.

Glenny mentioned that a great deal of part-time education in the U. S. is offered by industry and government, though without the relationship between them and the vuzes that exists in the U. S. S. R. The Xerox company, for example, has several thousand faculty members

on its staff, simply to provide instruction to its own employees. Students with only a year or two of traditional, formal higher education sometimes move into industry and continue their education there for the rest of their lives, with job advancement being awarded accordingly. Some companies offer training equivalent to that of graduate degrees, and a few are even authorized to award degrees. The companies' expenses for these educational activities can be used as tax writeoffs. Spurr added that the armed forces are "largely an educational institution"--probably the largest one in the U. S. in terms of student enrollments. The opportunities for free education are among the main inducements for entering the armed forces, and there is a regularized system for giving students academic credit for the courses they complete.

Burak summarized the paper he had co-authored with Chuprunov, and this led to several questions:

For how long in advance are manpower forecasts made? The State Planning Commission (Gosplan) has annual and five-year plans. Minvuz is working on forecasts to the year 2000.

How successful have the forecasts been in anticipating changes in economic conditions? The five-year plans for numbers of specialists are usually met quite precisely.

But how closely has the planned number of specialists met the actual economic needs? "It is easy to forecast" manpower needs, because they are determined by the growth of the population, technological changes, and "other well defined trends." Thus, the plans have met the needs quite well, in terms of major groups of occupations. In more detailed categories, there have been discrepancies, even significant ones; for example, the number of computer specialists needed was underestimated.

Is there evidence that the discrepancies are sufficiently reduced by planning, as compared to what they would be under free choice of fields by students, to justify the great expenditure of resources on the planning process itself? [This question was not discussed.--Ed.].

Glenny summarized his paper.

October 6 Session

Burak said that Glenny seemed to have the impression that Soviet higher education was devoted to training people for production, at the expense of the humanities; that was not correct. "Of all the cities located along the Volga River, only one--

Astrakhan--does not have its own university.[1] The U. S. S. R. is probably the only country that has more than 20 institutes of physical culture. Humanities account for more than 70 percent of student enrollments."

Burak also said that the fact that some companies train their own specialists, as pointed out by Glenny, is really a limitation in the educational system, because the range of courses offered by a firm is restricted to that firm's demand for specialists: "General Motors does not train actors for Hollywood." Feldmesser asked what the significance of this statement was, since after all, a Soviet institute of automotive engineering would not train movie actors, either. Burak replied that he wanted to show that, contrary to what Glenny had said in his paper, students did not have unlimited freedom in choosing an occupation. But, Feldmesser said, the fact that General Motors did not train movie actors was not a limitation on students' freedom of choice; the student who wanted training as a movie actor would not go to a General Motors school but to an acting school. Burak said he had "simply wanted to emphasize that, in both the U. S. S. R. and the U. S., there are restrictions on students' choices; in the former they grow out of the plan, in the latter they originate from other sources." Zakharov closed the discussion by saying that "freedom of choice... is always relative; there are always certain restrictions."

Rosen said that short-range and long-range projections of the manpower outlook are made in the U. S. by the Department of Labor. Its recent ten-year study predicted an oversupply of lawyers and an undersupply of health professionals. But Glenny said that the Department itself urges that the figures not be used for planning by universities, because of their probable inaccuracies. Furthermore, the projections assume that present conditions will continue, when that often isn't the case. For example, many institutions have begun turning their attention to the shortages in the health field, partly because of the Department's projections, and as a result there might well be a surplus instead of a shortage.

Savelev asked whether long-range plans in the U. S. "relied on fixed norms for specialists in various occupations." Glenny replied that at the federal and state levels, where most such planning is done, it is of a relatively generalized nature; in any case, there was no agency in the U. S. which allocated programs or students to institutions, so such "norms" were probably not relevant. Spurr described how the planning process looked to a

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[1] In the Soviet higher educational system, the humanities are taught for the most part in the universities, as distinct from the institutes, which are mostly concerned with training specialists for the various branches of the economy.--Ed.

university administrator. In a state university, the total budget is set by the state legislature, but the distribution of the budget is within the authority of the university administration. Thus, in effect, the state legislature determines the total size of the university, but the administration decides which departments will be enlarged and which diminished. Large universities usually have a well-staffed planning office; the University of Texas, for example, has about 20 professionals involved in long-term planning. Sometimes, the number of new students that can be admitted is limited by the size of the faculty or by the capacity of the equipment, as in schools of law, medicine, or architecture. In other fields, the number of new students will depend more on demand. However, the administration may also be responsive to national manpower projections; for example, plans may be made to increase the size of the faculty in computer science before student demand is manifested. Frequently, the federal government makes special grants to encourage institutions to take account of national needs. If major new capital facilities are needed, or a whole new department, or an expansion in the total size of the university, it becomes a decision to be made at the state level, and the state board of higher education or the state legislature then assumes the function of a ministry in the Soviet Union. It must be added, however, that in those cases there is often a lag of two or three years behind the employment figures. An important difference in the planning system of the two countries is that the Soviet Union has a much higher degree of continuity in government, compared to the U. S. system, in which elections bring considerable turnover in the membership of federal and state legislatures. Legislators tend to be concerned only with short-term planning, because that is what affects their re-election. Feldmesser pointed out, however, that even if decision-makers are in office for long periods of time, they do change their minds occasionally, and this can have the same effect as turnover; for example, there have been policy shifts in Soviet history from generation of electricity by thermal means to generation by water power, or from coal-powered to electric- or diesel-driven railways.

As a comparison with Spurr's description, Zakharov recounted how planning was done at his Institute. The education department of the Ministry of Railways supplies figures for the number of students to be accepted and graduated in each specialty. On this basis the Institute calculates the number of instructors that is needed, the number of classrooms, laboratories, textbooks, etc. The Institute's plan also takes account of needs for upgrading the faculty's skills, for supplementary equipment, additional living space for students, etc. In this way, a total sum of expenditures is calculated, and after corrections this becomes part of the Ministry's plan and part of the plan for higher education. Spurr said that the nearest thing in the U. S. to this "more rigorous kind of planning" in higher education is found in the academies of the armed forces, the Coast Guard, and the Merchant Marine, where

the government plans its needs, finances the institutions accordingly, and assigns the graduates to positions.

Gudkov remarked that, according to Glenny's paper, a major task of U. S. higher education is to train specialists who could adapt to changing conditions. This is a task in Soviet higher education as well; there is often a need to change people from one specialty to another, or to train people in new specialties in a short period of time. What characteristics do students have to acquire to be adaptable in that way, and how can educational institutions instill those characteristics? Glenny replied that "this is a basic question of all education." An approach to the problem commonly used in pre-professional education in the U. S. is to have a curriculum which provides a broad, common core of training that allows an individual to move into a number of different specializations. Feldmesser added that this is, in a sense, the philosophy of a "liberal-arts" education, which says that the best way to train a flexible specialist is not to train a specialist at all. Many people are unhappy that the "liberal-arts" graduate is unprepared for any particular job, but the other side of that coin is that such a graduate is capable of learning many different jobs because he knows some science and math, some history and social science, some logic, etc. Spurr pointed out that this was not an entirely accurate description, because the great majority of students do have a field of concentration; furthermore, about 25 percent of vuz graduates go on to graduate or professional study in the field of their undergraduate concentration.

Rosen asked about the "block-scheme" for educational planning described in the paper by Chuprunov and Burak. Previous detailed descriptions of Soviet education planning contained no reference to a "block-scheme": Is it a new method? Burak said that the paper was consistent with previous descriptions but was more concrete and reflected more up-to-date conditions.

Chauncey asked what the relationship was between NIIVSh and the Gosplan in matters of educational planning. Burak replied that NIIVSh did research on the methodology of planning, and on the bases of its research made methodological recommendations to Gosplan, which did the substantive planning. Feldmesser asked whether NIIVSh made a single set of recommendations or offered a set of options, and to what extent the recommendations were implemented. Savelev said that NIIVSh received information through two channels: "higher bodies" like Gosplan and the Statistics Department of Minvuz; and the vuzes themselves, through the branch ministries. Sometimes the two sources provided inconsistent information--e.g., specifying requirements for specialists in a certain field which exceeded the numbers that the vuzes could produce--and it was up to NIIVSh to reconcile the differences. Some of the recommendations that NIIVSh made had been applied, but it was only three years old and did not yet have the full confidence of the planning bodies.

SUMMARIES OF THE DISCUSSIONS AT SOVIET HIGHER EDUCATIONAL INSTITUTIONS AND OTHER ORGANIZATIONS

October 6-22, 1976

Moscow Textile Institute, October 6

Present during the discussion:

The members of the U. S. delegation
Ivan A. Martynov, rector, Moscow Textile Institute
Members of the faculty and administration of the Moscow Textile Institute

Martynov described the history and programs of the Moscow Textile Institute (MTI). It was founded in 1919, by authorization of a decree signed by Lenin in the midst of the civil war. Though the textile industry had been fairly well developed in tsarist Russia, its technical specialists were mostly foreigners; there were no vuzes, or even secondary schools, specializing in training for this industry. The first graduating class of MTI, in 1926, consisted of 15 people. Today MTI graduates about 1000 engineers each year. Total enrollment is 6000 students, of whom 3500 are in the day division. MTI is one of the largest vuzes in the country, and it is a "base" institution--i.e., one of 32 that are subordinated directly to Minvuz [rather than to one of the industrial or "branch" ministries--ed.], a status which imposes certain obligations upon it. There are 19 other vuzes which train specialists for the textile industry, and MTI assists them in solving their methodological and educational problems. It also holds scientific conferences and seminars of national scope.

Training is offered in 13 fields and 23 specializations. Instruction is organized in six departments: mechanical technology, which trains engineer-specialists in weaving, knitting, etc.; chemical technology, which prepares specialists in the dying and decoration of textile products and the technology of synthetic fibers; textile-machinery construction; energy mechanics, which has subdivisions of industrial-electronic automation, automation of industrial control, and thermal energy for industry; engineering economics; and applied art, which trains specialists in the design and modeling of fabrics and clothing.

About half of the student body has had experience in production before coming to MTI. About 30 percent of the students are young workers who have been sent to MTI by the enterprise where they are working; the enterprise pays them a stipend while they are studying.

Moscow State University, October 7

Present during the discussion:

The members of the U. S. delegation
Valentin M. Kuznetsov, vice director, Institute for Problems of Higher Education
Professor Evgenii M. Sergeyev, first vice rector, Moscow State University
Members of the faculty and administration of Moscow State University

Turnbull suggested a series of questions as a basis for discussion. How are persons identified as being appropriate for study at Moscow State University (MGU)? Does a student's course of study take account of his own desires or interests? What proportion of students are satisfied with their field, what proportion change to a different field? From the standpoint of the university, how are the numbers and kinds of students anticipated? How are the facilities that will be needed for them planned? In response, Sergeyev set out to describe MGU's selection process, but he accommodated his remarks to questions that were asked by U. S. participants along the way.

Students apply not to MGU as a whole but to one of its 17 departments, such as physics, chemistry, biology, geology, history, economics, law, mechanics and mathematics, or cybernetics and applied mathematics. Overall, there are usually about six applications for each opening, although the figure varies among different departments--e.g., this year there were especially large numbers of applications in biology and history, while last year the numbers were especially high in physics, economics, and psychology. It is difficult to say what influences these fluctuations, but developments and events in the Soviet Union and in the whole world must influence them. When the first sputnik was launched, there was an increase in the number of applications for physics and mathematics; when certain notable successes were achieved in molecular biology, there was an increase in applications for that field, but now, with the greater attention being given to ecology and to the protection of nature, there is renewed interest in classical biology.

Certain subjects are required for the entrance examinations in each department. For example, applicants to the Mechanical-Mathematical Department must take one written and one oral exam in mathematics and one exam each in physics and the Russian language; for biology, the requirements are one exam each in mathematics, physics, biology, and the Russian language; in history, a written and an oral exam in Russian language and

literature and one exam each in history and a foreign language; in psychology, exams in mathematics, biology, and written and oral Russian.

Do students take the exams where they live or at the university? Applicants from foreign countries may take the exams in their home countries; the same is true of applicants from the national and union republics of the U. S. S. R. Otherwise, all students take their exams at MGU. During the exams, applicants may reside in an MGU dormitory without charge; the exams are administered in succession--first the science departments, then the humanities, etc.--so that a place in a dormitory can be provided for every student who needs one. Because of MGU's interest in selecting the most capable students, it is continuously studying the reasons why talented youth are unable to attend it. Some students have to go to work after completing secondary school in order to help their family; others fulfill their military obligation; still others may have received good grades in secondary school but don't do well on the entrance exams. For applicants who have been in the military services, or who have worked at least two years since completing secondary school, there is a "preparatory division," where applicants study for eight months, reviewing secondary-school material, and then take their exams; if they pass, they are admitted to MGU. Preparatory-division students are provided with a dormitory room at the usual rate, which is very low, and they are given a scholarship equal to that of a first-year student. There are currently 720 students in the division.

How are students selected for admission into the preparatory division? Preference is given to those with the highest grades on their secondary-school leaving exams, and then their length of employment or military service is taken into consideration. There are about three applicants to the division for each vacancy. A panel of professors in the field the applicant wants to enter interviews the applicant, estimates how much of the secondary-school program he remembers, and judges how accurate a perception he has of the field he wants to enter and what his motives are for wanting to enter it. They also take into account the recommendations he has received. MGU is also concerned about the fact that students apply with different levels of preparation; a student from a secondary school in Moscow will have had a better education than one from a rural school. To deal with this, MGU has established extramural preparatory courses. For a small fee--fifteen rubles a year--textbooks and other materials and assignments are sent to students, and the MGU faculty looks over the work that is returned and helps students from remote areas prepare themselves for the entrance exams. There are about 20,000 students in these extramural courses, though not all of them are preparing for entrance into MGU. On the basis of faculty recommendations, 2000 of these students are invited to spend a month studying at MGU, without charge.

Besides the year-to-year fluctuations, are there long-term trends in the fields to which students apply? The number of students admitted to each department is stable, and it does not depend on the number of applicants. These numbers are determined by Minvuz and Gosplan, in accordance with the needs for specialists in each field, but also taking into account the university's material and technical capabilities, the size and composition of its faculty, etc.

Are students informed about what the quotas in each field are? Each department posts its quota, and it also posts the number of applications it has received, changing the figure daily as new applications come in. There are cases when an applicant sees that a great many other students have applied to the same department and so withdraws his application and submits it instead to a department where there are fewer applications. Perhaps 10 percent of students are those who enter whatever field they can, wherever there are the fewest applications. On the other hand, there are some students who are determined to enter a particular field no matter what; there was one case in which MGU requested that the ministry permit a supplementary admission so that a student could be admitted who had applied for the same field four times.

Would it be possible to obtain a list of the departments and their admissions quotas? The departments are listed in the MGU catalog [a copy of which was given to each U. S. participant--ed.]. The admissions quotas are not in the catalog because they change from year to year. But MGU has no desire to increase its total enrollments, because it performs certain functions that other vuzes cannot perform because they are less well equipped and do not have so high-quality a faculty. For example, MGU has 5000 graduate students.

Are any efforts made to prepare graduate students for the responsibilities they will presumably undertake as teachers in other vuzes? About half of the students who receive an advanced degree at MGU go to teach at a vuz. Every graduate student is required to get some pedagogical practice. A student may deliver two or three lectures in the presence of a professor, help students with their course work or their practical work, or help direct diploma projects, but there are no special courses in pedagogy for graduate students. However, there is a department for the upgrading of the qualifications of vuz faculty; 2500 people are admitted to this department each year.

When a student applies to MGU, does he have to state not only the field which he wants to enter but also the branch within the field--e.g., not merely biology but molecular biology or "classical" biology? There are a few departments in which that is true: In physics, for example, there are separate admissions for physics,

geophysics, and astronomy; and in history, there is a separate admission for art history. But in most departments, admission is to the department as a whole, and all students in the department follow the same course of study for the first two or three or even (in the chemistry department) three-and-a-half years. During that time, practically all courses are required ones, but in the upper classes, after the student has selected a specialization, there is a wide selection of subjects. Great importance is attached to the students' participation in the scientific work that is going on in the university. Efforts are made to relate the student's course work and diploma project to the research in his program. In some departments, such as geology, biology, geography, and soil science, a student spends the equivalent of about one year of the five-year course of study in "academic-production practice." Students are paid for this work, and in the upper classes, a student can choose his practical work in accordance with his interests. Furthermore, MGU has set up branches at the International Center of Nuclear Research in Dubno and at the branch of the Academy of Sciences in Pushkino. MGU students live there and work with equipment that the university does not have, and they attend lectures on subjects that are outside the competence of the MGU faculty. The students' interests are also served by giving them a broad preparation in the fundamentals in their first years in the vuz. Students do not choose their specialization until they have been at the university for two or three years; since they then have a clear idea about their field, there are only rare cases when a student changes his specialization.

How is it possible to plan quotas for such "liberal-arts" fields as history? Historians work in secondary schools, in institutes engaged in studying problems of history, or as scientific workers or consultants in other organizations. Each of these organizations can plan the number of historians it will need. Perhaps the most complicated specialization for which to plan quotas is philosophy, but even there the kinds of places to which graduates of a philosophy department go are known, and they, too, can plan their needs. Thus, planning manpower needs is not a troublesome problem. In the Soviet system, planning the numbers of people who will be needed in various fields five years hence is essential, because every vuz graduate is guaranteed a job.

What happens if the organizations that were going to hire the philosophers, or the physicists, change their plans during the five or more years required for students to complete their studies? Or, if the organizations are obliged to hire all the people they planned, doesn't that mean that there are rigid limits on the amount of change that can take place in the composition of the professional labor force? The plan determines in advance the number of workers needed in the country as a whole, and each organization establishes its own labor needs within that framework. There are deviations from the plans in one direction or the other, but on the scale of the country as a whole they balance out.

Do the vuzes provide counseling or other non-instructional services? Any problems that a student has are handled by the teacher with whom the student is working. However, MGU has recently set up a system whereby a "senior instructor" is designated for each student cohort [i.e., the first-year class, the second-year class, etc.--ed.]. This instructor participates in the admission of the class and is expected to develop closer ties with its members than other instructors do. He remains with the class throughout its course of study. In consideration of the time he spends with students, his teaching load is somewhat reduced. For medical services, MGU has its own polyclinic, and in fact had just completed building a second one which can handle 1200 people a day.

Is there any information about how the qualifications of MGU graduates compare with those of graduates of the best universities in other countries? The graduate of MGU is at the level of the master's degree in the U. S. The student who receives a kandidat degree is at the level of the U. S. doctor's degree or of the "first-level" doctoral degree in the Federal Republic of Germany.

Moscow Institute of Management, October 7[1]

Present during the discussion:

Members of the U. S. delegation Chauncey, Glenny, Rosen, and Spurr
P. A. Kolesnikov, vice rector for educational affairs, Moscow Institute of Management

The Moscow Institute of Management (MIU) was established in 1972, in the facilities of what had an economics institute. Its purpose is to train managerial personnel for the machinery, metallurgical, chemical, construction, and power industries, and for transport and urban administration. It is the only institute of its kind in the country, though there are plans for another one. Current enrollment is 5000 day students and 5000 evening students; among them are foreign students from all of the socialist countries. The 1100 students admitted into the day program in 1976 were selected from among 3000 applicants. Applicants are required to take an oral and a written exam in mathematics, an oral exam in physics, and a written exam in the Russian language. About 80 percent of the students are from Moscow and are subsequently employed in Moscow.

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[1]This discussion was not recorded; the summary is based on the notes of several of the U. S. participants.--Ed.

MIU offers 45 programs, organized in four departments. It also has a department for the advanced training of vuz faculty. All students take courses in mathematics, physics, engineering drawing, electronics, computers, statistics, finance, philosophy, history of the Communist Party, political science, psychology, and personnel administration. The case method is used in courses on man and the computer and on industrial psychology. Instructional games are now being prepared for use in the fifth year of study. Students engage in practical work during the third, fourth, and fifth years.

Graduates of MIU generally obtain jobs as junior executives in research and planning institutes, administrative sections of ministries, and industrial enterprises. Students receive notices of job openings, and organizations send representatives to the institute to interview them. The demand for graduates is far greater than the supply. Starting salaries range from 200 to 700 rubles a month.

The main problem of MIU is trying to broaden its scope beyond the industries related to engineering. Organizing new courses and getting qualified specialists to teach them has also been a problem. There is a shortage of laboratory space, but this will be overcome by the construction, now under way, of an entire new campus about 20 kilometers outside of Moscow.

National Polytechnical Extramural Institute, October 7

Present during the discussion:

Members of the U. S. delegation Cross, Feldmesser, and Turnbull
Valentin M. Gudkov, vice rector, National Polytechnical Extramural Institute
Members of the faculty and administration, National Polytechnical Extramural Institute

Gudkov provided information about the student body of the National Polytechnical Extramural Institute (VPZI). In the 1975-76 year, diplomas were awarded by VPZI to 2411 students, of whom 1400 were men. Men tend to dominate in the mining, metallurgical, and construction specializations, while engineering economics and some of the chemistry specializations are largely female. About 45 percent of the students had completed secondary education in a regular day school, 25 percent in an evening school, and 29 percent in a secondary specialized school. By origins, 52 percent of the students are from worker backgrounds and 47 percent from white-collar backgrounds. In age, 5 percent are less than 20 years old and 76 percent are 20 to 35.

Students who take evening courses can complete their studies at VPZI in six years, but the majority of students take seven or eight years. Graduates of VPZI have had their work displayed at the National Economic Exhibition and have even won gold and silver medals there. Kondrat'yev, the architect who designed the buildings of MGU, is a graduate of VPZI, and the cosmonaut Aksenov took the Institute's course on strength of materials (receiving a grade of "good"). A survey is currently being made to find out what happened to the 259 people who completed their training at VPZI in the field of geology over the past 11 years, and data are now available on 200 of them. In terms of occupations, 85 percent are working in their field of specialization, 76 percent as engineers and the rest in elective and administrative jobs. Six have retired and four, all women, are not working because of family obligations. Four of the graduates have received their doctorate, 14 have received the degree of kandidat, and 27 others are engaged in graduate work.

Cross remarked that a major problem with correspondence study in the U. S. is that students have difficulty with self-discipline and hence frequently do not persist in their studies. How does VPZI deal with this problem? Every student is given instruction in study methods at the outset. The main task in extramural education is to make things so clear to the student that he understands what is needed and has confidence in his ability to do the work. Independent work must be scientifically organized. Lenin once said, "We must unite American know-how with Russian scale," but now that may be changed to "We must unite Russian know-how with American scale." Every minute of the student's time must be made more useful. However, a student should also be able to live a normal life--to engage in sports and have some entertainment, etc.

But what does VPZI do to make sure that students do not become so interested in sports and entertainment that they neglect their studies? Many of the students are sent to study at the Institute by their employing enterprise, and the Institute maintains contacts with those enterprises. The student's teachers are in touch with his work supervisor, and people at the enterprise speak to students who fail to complete their assignments or to take their exams. There is also a widespread form of organization called the "council of assistance to extramural students" (soviet sodeistviya zaochniku); each city has such a council, or a district of the city or a single enterprise may have one if warranted by the number of students. The council is composed of representatives of the enterprise administrations, of social organizations, of local governing authorities, of experienced workers, etc. Its function is to make sure that the student is keeping up with his studies and, on the other hand, to make sure that the enterprises and the local authorities are giving the student the help he needs--that he is being given the

leave to which he is entitled, that all his other legal rights are being respected, that he is being promoted at work according to his merits, that the enterprises are providing laboratories, classrooms, television apparatus, or whatever else may be needed. Thus, extramural study is made a social matter, not merely something of personal value to the student. But in the last analysis, if a student is determined to drop out, nobody can stop him. There are many cases in which a student drops out after a year or two and then, perhaps two or three years later, resumes his studies with a qualitatively different attitude; his interest has become a psychological need, and then he completes his studies successfully. However, as was said at the seminar, even students who do not complete the course of study nevertheless benefit from what they have learned--in their skills, their careers, and the quality of their lives.

Turnbull asked whether there were enterprises at which a student could do all his academic work, without ever coming to the Institute. The answer was that there were not, although a student could complete his studies by attending only a branch of the Institute rather than going to the main building. Going to the Institute or a branch is necessary for taking exams, for attending special lectures, for carrying out the diploma project, and in some cases for doing laboratory work. Students are given 30 or 40 days leave each year for these purposes, and four months leave for their diploma project. During that time, they live in a dormitory of the Institute, at little or no charge--a small charge may be made for its "pedagogical effect"--and they pay only half the cost of their travel to and from the Institute.

Moscow Pioneer Palace, October 8[2]

Visitors were members of the U. S. delegation Glenny and Spurr

The Pioneer Palace is a large modern building. It serves children from preschool age to 16 in the entire city (rather than in only a few districts, as some of the smaller palaces do). The programs take place after school and include dancing, music, sewing, cooking, radio, electronics, astronomy, and other activities similar to those of the Boy Scouts and Girl Scouts in the U. S. One large room is devoted to games for one to three people. All of the games had been made by the children at the Palace; some of them are versions of hockey, basketball, etc., played on a table, while others are of the children's own invention. There are also formal classes; the children in them seem more interested than would be expected of a comparable group of children in the U. S. Although all of the activities that are available are also available to children in the U. S., the Palace presents them all in one place and at little or no direct cost.

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[2]Based on notes of the U. S. participants.--Ed.

Institute on Problems of Higher Education, October 8[3]

Present during the discussion:

Members of the U. S. delegation Chauncey, Rosen, and Turnbull
Valentin M. Kuznetsov, vice director, Institute on Problems of Higher Education

Kuznetsov gave additional details about the Institute. It was formed because research on higher education had been uncoordinated and sometimes resulted in inconsistent conclusions. It has three main areas of research: character development [vospitanie], economic and long-term planning, and dissemination of information among vuzes. Research activities are organized into ten departments: theory of instruction and methodology (which has seven sections, dealing with topics such as didactics, physiology and psychology of learning, extramural education, and instructional television); scientific organization of instruction (planning and monitoring instructional programs, mathematical modeling, instructional films, computer-aided instruction, automation of libraries); organization of research; Communist character development (which includes social-science teaching); economics of higher education; automated management systems; secondary specialized education; international education; and an information center. A computer division serves all departments.

In a discussion of future exchanges, Turnbull suggested that one possibility is for a Soviet and a U. S. scholar to visit each country together for several months to study a common problem. Possible topics would be:

--guidance;

--the meaning of degrees, which could be studied by (a) analyzing the content of instruction at each level; (b) administering common test questions to students in both countries; or (c) investigating rates of success and failure among students placed at various levels in moving between the two systems;

--training and re-training of faculty members;

--"non-traditional" forms (use of the mass media, extramural study, linkages between the workplace and the educational institution);

--processes of educational planning;

--theory and practice in the transition from secondary school to higher education.

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[3]Based on notes of the U. S. participants.--Ed.

Kuznetsov endorsed these topics but said that, in addition to the two scholars, there should also be exchanges of small groups that would inquire into subjects of interest to the sending nation. For example, the U. S. S. R. would like to improve its system of admissions into higher education and might want to send a group to the U. S. to look into that topic.

Central Council of the People's Universities and of the Administrative Board of the Znanie Society, October 8

Members of the U. S. delegation Cross and Feldmesser
Mr. Dubenko, academic secretary, All-Union Central Council of the People's Universities
Mrs. Sokolova, academic secretary, Central Council of the People's Universities of the RSFSR
Aleksandr P. Vladislavlev, vice chairman, Administrative Board of the Znanie Society, and vice chairman, All-Union Central Council of the People's Universities

Vladislavlev explained that the People's Universities have three main objectives: (1) To satisfy the varied interests of the Soviet population.

> The most important interest of the Soviet people which we must satisfy is the formation of a scientific outlook....The individual is surrounded with such a flow and variety of information that it can overwhelm him...and if the individual does not have a scientific perspective, he cannot relate new information to what he already knows.... Whatever the interests that originally brought the individual to the People's University--and it is only the individual's interests that bring him there--our task is to use those interests to form a scientific outlook in him.

(2) To provide people with training to help them perform the duties of their "social occupations." These are community-service activities undertaken by individuals voluntarily and without pay; they include such "jobs" as people's controllers (who exercise supervision over governmental and cooperative organizations), legislative representatives, people's assessors (who function collaboratively with a judge in court cases), workers' correspondents for the media of communications, and sanitary inspectors (who also have duties connected with

the protection of the environment). Persons who engage in these activities are not required to have training for them, but they often find that training helps them do a better job. (3) To help people improve their skills in their [paid] occupations. There is a large governmental system for doing this, but there is so much to be done that the People's Universities must help. About half of the students in the People's Universities are there for the first purpose, 30 percent for the second, and 20 percent for the third.

There is a branch of the People's Universities for practically every branch of knowledge, and for each one the Central Council publishes a model academic and methodological plan. For example, there is a plan for "literature and art in rural People's Universities." It is designed as a two-year course of study, but it can be longer or shorter, depending on one's "sphere of activity" and previous education. As of July 1, 1976, there were 38,278 People's Universities; about 9700 of them were one-year universities, 18,000 two-year, 6000 three-year, and 4000 four years or more. No University has less than 50 students; most of them have between 100 and 150 students, and the largest, in Moscow, has 12,000. The total number of students is 10,000,000.

The most popular courses are those in what is called "domestic pedagogy"--problems in bringing up children, questions of health, different methods of teaching children in the home. [Cross asked whether men as well as women took these courses; the question provoked general laughter and no answer was heard.--Ed.] The next most popular courses are the "cultural" ones--literature, art, films, theater, music, sculpture. There is also great interest in philosophy. When a student has completed a course of study, he receives a diploma which shows all the courses he has taken. A course must meet at least once a month for four hours, but the typical course meets once a week or twice a month for four hours at each meeting.

The All-Union Central Council of the People's Universities has 120 members, representing the ministries of health, culture, justice, education, agriculture, and various industries, and the trade unions, the Znanie Society, and other social organizations dealing with the Universities' objectives. The Council's paid staff consists of six full-time people. Vladislavlev is one of these, though he also holds a half-time job as a member of the faculty of the Moscow Petroleum Institute. Each republic and each region has a council, with smaller staffs. The councils draw up long-range plans, receive reports from ministries and social organizations, conduct methodological work and issue methods handbooks, and evaluate the work of the entire organization.

Most of the work of the People's Universities is done on a voluntary, unpaid basis. They receive no money from the

government, but they have two sources of income. First, students pay small fees for some courses--e.g., those in applied arts, which use considerable amounts of materials. Second, and of growing importance, some universities enter into contracts with industrial and agricultural enterprises for the training of their employees. These enterprises pay the universities a certain amount, depending on how many of their employees take courses there. This system was started only recently.

In response to a question from Cross, Vladislavlev said that "about 10 percent of the students failed to complete their courses." Feldmesser and Cross asked several questions to try to find out why the attrition rate was so much lower than it would be in comparable institutions in the U. S.; the answers were in terms of the strong motivations and the "objectively profound and wide interests" of the Soviet people. Vladislavlev cited the instance of a People's University of Culture in Riga; the tuition was 40 rubles a year, "a large sum of money," and yet "there are many more people who want to get in than there is room for."

The Soviet participants said they were considering the use of tests to evaluate students in the People's Universities, and they asked what U. S. experience in that area had been. Cross responded that adult education, especially in vocational areas, is moving away from paper-and-pencil tests toward performance tests, where a student is asked to demonstrate what he can do or to show what he has already done. Feldmesser pointed out that, in many adult-education courses, students do not receive any grades, since the students were taking the courses purely for their own interest, and consequently their academic work is not formally evaluated at all. Cross added that there are "two tracks" in U. S. higher education for adults: "a non-credit track, which is most of it; and postsecondary diploma programs, which is the fastest-growing part, much of it being vocationally oriented courses in open admissions colleges." Many universities also offer non-credit adult courses, by mail or in evening schools; one of the largest adult schools has 300,000 students. Asked what kinds of non-credit courses were the most popular, Cross said "mostly the personal-interest kinds--family, literature, history, politics, and bridge and many other recreational and sports activities."

People's University of the Moscow House of Technical Progress, October 8[4]

Present during the discussion:

Members of the U. S. delegation Cross and Feldmesser
Members of the faculty and administration of the People's University of the Moscow House of Technical Progress

The People's University of the Moscow House of Technical Progress (DTP) is one of the largest people's universities; it has graduated 26,000 students since 1960 and has a current enrollment of 2500. It operates "on a vuz basis"--i.e., all its faculty members have positions at vuzes or in research institutions; among the faculty members present, for example, one was a laboratory head at the Institute of Control Science of the Academy of Sciences and others taught at MIU and the Baumann Higher Technical Institute. At DTP, they all work as unpaid volunteers. DTP is an "occupational [professional'nyi] university"; its programs are for the upgrading or re-training of professional people--only persons who have already completed a higher education are admitted--and it does not offer courses of general public interest. It is supported by the House of Technical Propaganda and by allocations from organizations and enterprises which are members of the House of Technical Propaganda; this house also arranges conferences, lectures, consultations, and two- or three-day seminars for industrial specialists who are sent by their enterprises, which also pay DTP for this service. DTP is organized into 18 departments, such as management and automatic control, engineering economics, and electromechanics; a new department of automation and mechanization of machine-building is now being organized. Each department offers about 20 courses. Some courses are designed for people in certain social occupations--e.g., scientific-technical propagandist. DTP also develops and publishes methodological aids.

[4]The House of Technical Progress, headquarters for this People's University, is a former nobleman's home. The lavish decorations on the walls and ceilings have been kept in good condition and were obviously the source of a great deal of pride for those who worked in the building.--Ed.

Tallinn Polytechnical Institute, October 9

Present during the discussion:

The members of the U. S. delegation
Boris Tamm, rector, Tallinn Polytechnical Institute
Members of the faculty and administration of the Tallinn Polytechnical Institute

Tamm pointed out that the Tallinn Polytechnical Institute (TPI) is the only technical vuz in Estonia. It was founded in 1940, but did not operate during the war and so was "re-founded" in 1944. Its present buildings have all been erected since 1966. TPI maintains close connections with Tartu University and has a student exchange with several Soviet technical institutes.

Student enrollments are about 5500 full-time, 2000 evening, and 2000 extramural. At least 80 percent of the students enter TPI immediately after secondary school, but about 250 students are enrolled in a preparatory department, which offers a one-year course of study--called the "zero course"--to persons who have been out of school for a while. About 1200 students are admitted annually into the full-time program, 600 into the evening program, and 250 into the extramural program. There are twice as many applicants for full-time study as there are openings, but in the evening and extramural departments almost everyone who applies is admitted. TPI faculty members visit many of Estonia's 142 secondary schools to describe their institution to students; printed material is sent to every school, and during one week in April secondary-school teachers are invited to visit the Institute with their students. By plan, 98 or 99 percent of secondary-school graduates who go on to higher education do so in Estonia. Of the 1000 graduates of TPI each year, most take jobs in Estonia; about 50 go on to graduate study.

TPI has a faculty of 640 full-time persons and several hundred part-time ones, organized into departments of electrical-power engineering, radioelectronics and automatic control, civil engineering, chemical engineering, economics, and mechanical engineering. A faculty member's normal workload is 1550 hours a year. Half of this is devoted to lectures, seminars, and laboratories, divided among full-time, evening, and extramural students; the more experienced instructors do more of the teaching in the evening and extramural departments. The other half is used for the improvement of teaching methods and for research. There are 36 weeks in the academic year.

The U. S. participants asked a number of questions about the language of instruction. About two-thirds of the classes at TPI

are taught in Estonian and the rest in Russian. Most of the students know Russian well, because they have studied it (as well as Estonian) in secondary school; for this reason, the period of elementary and secondary schooling in Estonia is 11 years rather than the usual 10. About 70 percent of entering students have also studied English, and most of the others have studied German. Most of the books in the basic scientific subjects are in Russian, though there are many that were written in Estonian or have been translated into Estonian from Russian or other languages. Estonian applicants must take an entrance exam in Russian, and Russian applicants must take one in Estonian.

A separate session of the discussion was devoted to evening and extramural studies, with the heads of those departments in attendance. By law, the Institute may offer evening and extramural programs only in those fields in which it offers full-time programs. The course of study is the same for all students, but the individual courses in the extramural program are shorter, so it requires six years to complete rather than the five required in the full-time program. Beginning with their fourth year, extramural students must be employed in the same field of specialization which they are studying. Students from all programs take their final exams and defend their diploma projects before the same committees. Evening and extramural students are usually weaker than full-time students, especially in theoretical subjects, but they improve in the last years and finish as good engineers. A few students from the evening department go on to graduate study, but that is rarer among extramural students. Up to the age of 35, evening and extramural students who do go on to graduate study may transfer to full-time study; afterward, they enter extramural graduate programs.

At the beginning of the school year, evening and extramural students receive booklets about forms of instruction and methods of study, a plan of the curriculum, and a set of basic questions on various topics. They borrow their textbooks from the library, and they may request the library to send them other books through the mail later in the year. All materials are free. Students also receive a chart which shows the dates of tests and when laboratory and other projects must be completed, so that if they have to go on business trips they can arrange their schedules accordingly. Extramural students receive and return their assignments through the mail; the assignments are checked by the faculty, and students are informed of the results again by mail. Extramural students attend lectures and examination sessions at the Institute twice a year in the senior courses and four times a year before that. In one large town, where 200 extramural students live, there is a branch of the TPI extramural department, and students may consult with professors and even attend lectures there. There is some use of television for extramural students.

Evening students attend lectures at TPI four evenings a week, so most of them live within 20 or 30 kilometers of Tallinn. Extramural students, however, live in all parts of Estonia, 90 percent of them outside of Tallinn.

Students in the evening program are granted paid leave of 20 days during each of their first three years of study, and 30 days starting with their fourth year, to prepare and take their exams. Extramural students are granted 30 to 40 days of paid leave each year. Students may also have one day a week at half-pay if they wish. While working on their diploma project, they receive four months of paid leave. Some students are sent by their enterprise to study in the evening program, and in those cases the enterprise will pay them a stipend and then expect them to apply what they have learned in that enterprise. Information about the academic progress of evening and extramural students is regularly sent to the place where they are working, and representatives of each workplace come to the Institute twice a year and meet with deans and professors to discuss the students. This is a "very serious discussion," because the enterprises will later grant bonuses to their employees who have done well in their studies. A "good" enterprise will also inform the Institute about how well its graduates have done at their jobs and may make suggestions for changes in the academic program.

Tartu University, October 11

Present during the discussion:

The members of the U. S. delegation
The vice rector for instruction and other members of the administration and faculty of Tartu University

The vice rector for instruction described the history and present status of Tartu University. It was founded in 1632, ceased to operate in 1710, was restored in 1802, and has operated continuously since then, playing an important part in the cultural development not only of Estonia but also of Latvia and Lithuania. During the 19th century, a special institute for the training of professors functioned at the university; it furnished hundreds of professors and members of the academies of sciences to prerevolutionary Russia and other European countries. Among the well-known scientists who taught there was the astronomer Struve. During World War I, it was evacuated to central Russia, where it gave birth to a "daughter" university. In World War II, it suffered damages estimated at 42,000,000 rubles, but its original capacity has now been more than restored. During the bourgeois period [i.e., the 1920s and 1930s, before Estonia became a Soviet republic--ed.], Tartu was the only vuz in Estonia; today it is one of six vuzes.

The university has 101 buildings, scattered all over the town of Tartu (which was founded in 1030) and imparting to it a special color. The main building was opened in 1809; during the current Five-Year Plan period, a complete new set of buildings is to be constructed. The library holds 3,500,000 volumes and has ties with more than 800 libraries in other countries. The botanical garden will soon be celebrating its 150th anniversary. The university has its own publishing center, which issues some 40,000 pages of text annually, and a service center for audiovisual and other technical aids to instruction. It has a medical center which is concerned with preventive medicine as well as with the health problems of the students. The university's six dormitories house two-thirds of the students. Students have access to two sports centers, one in Tartu and one--"a showplace"--just outside the town; to facilities for painting and drawing; and to a domestic sciences center where, among other things, they may learn to drive a car.

The current student body consists of 4800 full-time students and 2000 extramural students; 19 nationalities are represented among them, but 85 percent of the students are Estonian. Nearly 2000 students were graduated in the spring of 1976, and 1470 were admitted in the fall of 1976. Ninety percent of the students are members of the Young Communist League [YCL, or Komsomol]. About 90 percent of the students move ahead from year to year at the normal rate, but this is low for the vuzes of Estonia, and Tartu is "often reproached about this." However, said the vice rector, "We have our own traditions, and we are not making any concessions." The proportion has been increasing, and in other respects students' academic achievements have been outstanding. For example, 51 percent of the students graduate with all "good" or "very good" grades, and over the past five years, 78 percent of the students have received their degree on time. The dropout rate in 1975-76 was 4.6 percent, and only 2.4 percent were expelled because of academic insufficiency. Students themselves have been involved in efforts to improve academic work; for instance, there are student representatives on the board which distributes the student stipends. Students also have a voice in the arrangements made for student housing. The rector has at his disposal a fund of one percent of the total student stipend fund, which he can use to reward deserving students or to help those who may be in need.

The faculty numbers 690, or 669 full-time equivalents. Among them are 109 full professors with doctoral degrees and about 400 assistant professors with kandidat degrees. Ten of the faculty are full or corresponding members of the Academy of Sciences. There are also about 1300 auxiliary staff members engaged in teaching or research.

The university is organized into nine departments for full-time students and four for extramural students. The largest

department is medicine, which offers programs in therapeutics, pediatrics, sports medicine, pharmacy, and dentistry, as well as a program for physicians. The other full-time departments are history, which includes psychology and speech therapy; biology, geography, and geology; philology, linguistics, and literature; physics and chemistry; physical training, which prepares trainers for various sports; economics, which trains not only economists but also commodity specialists, bookkeepers, and specialists in finance and credit and in economic cybernetics; mathematics; and law. These departments offer a total of 26 specializations, or 60 if all the sub-specializations are counted. The normal period of study is five years, but it is four years in the economics department and six years for physicians and pediatricians. There is a syllabus for each course of study, but bright students are permitted to develop individual programs, usually in inter-disciplinary areas.

The university has 13 "problem laboratories," financed by the state for work in basic research; and three "branch laboratories," supported by ministries or other organizations interested in research on specific problems. There are also centers for research on problems of Communist education and problems of higher education, and a students' research bureau. In addition, various departments have research contracts with other organizations, in the amount of 1,500,000 rubles for the current year. The university encourages students to become involved in research activities and offers them facilities for this purpose. A course in fundamentals of research has been introduced into most of the curricula. An evaluation of the student's research ability is included in the "testimonial" that each one receives upon graduation. Students must also have practical training in their field, either as teachers or by working in some organization.

The head of the university is the rector, and he is assisted by four vice rectors--for instruction, research, extramural education, and administration. A University Council advises the rector on all important questions, and there are specialized councils responsible for the conferring of degrees, for methods of teaching, and for research coordination. The Communist Party organization, the YCL, and the trade-union organization play an important part in the management of the university. The response to a question about the specific functions of the Party and trade-union organizations was as follows:

> The party organization here is concerned with how the directives of the central Party organization are carried out here. The Party organization does not replace the university administration,

but is interested in the fulfillment of certain general directives. For example, the question of academic achievement would be discussed at meetings of the Party organization and at joint meetings of the Party and the University Council.

Several questions were asked about student transfers from one field of study to another. The vice rector said that such transfers were unusual. The university has prepared a series of detailed occupational descriptions, and students can obtain these before entering the university, so the need to transfer has been minimized. There are perhaps two or three transfers a year, most of them in the student's first year of study.

The vice rector was asked to describe the process by which a student obtained a job upon graduation. He said that each year the university receives a document showing the number of appointments to be made in each field. Organizations interested in hiring new specialists provide information about the nature of the job, the salary, and the living accommodations, and students indicate their preferences. Then a university board makes the selections, taking into account the student's wishes, academic standing, civic activity, etc., although "the plan is the overriding factor." Every student is guaranteed a job, and in only rare instances does a student find a job on his own. Virtually all appointments are to jobs in Estonia; the exceptions are in such a specialty as sports medicine, when graduates may return to the republics from which they came, or when a graduate is getting married--"and since most of the subjects taught at this university are in the humanities, and two-thirds of our students are women, the question of marriage does come up." There are some so-called "free" degrees; these are cases in which "a graduate will not be sent to a given position but will be permitted to stay in Tartu, perhaps because his parents are ill or are invalids or because the graduate has recently been married." If a student wants to begin graduate study immediately after graduation, he may petition a faculty council and it will consider his case, but ordinarily a student must get some work experience first.

A student is expected to work for at least three years at the job to which he is appointed. The first year is considered to be probationary. At the end of that year, the employing organization sends a report to the university; these reports are discussed and such changes in the academic program as may be necessary are made.

The U. S. participants raised questions about a rule which they understood had been issued by the Soviet government several years previously, under which a degree was to be withheld until a student who had been appointed to a job had actually arrived there. The vice rector said that the rule had been revoked, because it was no longer needed. At the time it was issued, "there were

shortages of specialists in particular fields," and so it was urgent that they be properly distributed. But those shortages have now disappeared.

> Our graduates are quite grateful for the fact that they are guaranteed a job. It is quite sensible that the State Planning Commission would have a better overview of where specialists are needed.... The state has paid for a student's education on the average for five years....The vast majority of our students appreciate this, and in the vast majority of cases they appear before the appointments board and sign appointment papers with no discussion whatsoever. There are some students--often those who have been doing worst in their studies--who raise all sorts of claims...and it was mainly in connection with them that the rule had to be issued. But that was some time ago, and it has now been canceled.

Chauncey asked about relationships between the university and NIIVSh, but it was apparent that those present knew little or nothing about it. "The Estonian Ministry of Higher and Secondary Specialized Education coordinates our work."

Asked what the university's "two biggest problems" had been over the past ten years, the vice rector said they had been "improving the methodological level of teaching and the inculcation of the methods of scientific research among our students." By dealing with those problems, the university had been able "to raise students' academic achievement rate during the past few years by about ten percent." An important device in accomplishing that has been the student's time budget.

> There is always the danger that an over-enthusiastic instructor attaches too much importance to his own subject, and the amount of reading required of the student thus expands. It is the duty of the university to keep things within bounds, to avoid any disproportions.

Kiev State University, October 12

Present during the discussion:

The members of the U. S. delegation
Mikhail U. Biliy, rector, Kiev State University
Piotr G. Bogach, vice rector, Kiev State University
Vasiliy P. Hishnyak, chairman of the trade-union committee and member of the faculty, Kiev State University
Yuri Y. Kondufor, head of the department of history, Kiev State University
Pavel S. Matishevskiy, head of the department of law, Kiev State University
Yakov M. Serischev, vice rector, Kiev State University
Vasiliy I. Strizhak, head of the department of physics, Kiev State University

Biliy gave a general description of Kiev State University (KGU). Founded in 1830, it now has about 11,000 full-time, 5000 extramural, and 4000 evening students. They come from 87 countries, including the U. S. Extramural and evening students used to be in the majority, but full-time enrollments are growing and will be the basic form of higher education in the future. Competition for admission varies among the three divisions and from department to department. In law, there are three or four applicants for each opening in the extramural and evening programs, about ten for each opening in the full-time program for students coming directly from secondary school, and about four for each opening in the full-time program for those who have had work experience. In some of the science departments, competition used to be quite keen but is now less so--about two applicants per opening--while competition has been intensifying in such fields as history, Romance and Germanic philology, biology, geology, and cybernetics.

About 25 percent of the students entering the physics department, and a number who enter other departments, are graduates of the special physics-mathematics boarding school in Kiev; however, all students follow the same program, regardless of the secondary school from which they come. Of the 2000 students admitted to full-time study in 1976, about 400 came from KGU's preparatory program which offers evening and extramural courses and full-time study to applicants who have been out of secondary school for some time. All preparatory-program students who pass the exams are eligible for admission, but KGU's enrollment plan places a limit of 25 percent on the proportion of admissions that may come from the preparatory program; preference is given to students who have worked the longest. Admission to the preparatory program is based on an interview with the dean and several faculty members, who determine the applicant's "aptitude for learning" by seeing how the student attacks a problem. Applicants must also

present a recommendation from a general meeting of the workers at the enterprise where they are employed.

KGU has 19 departments and several research institutes and problem laboratories. About 200 members of the faculty have doctoral degrees and about 2000 have kandidat degrees. Every faculty position is for a five-year term of appointment. In considering whether to re-appoint a faculty member, both his research and his re-training experience are considered. KGU has re-training departments in several fields, where faculty members (from other vuzes as well as from KGU) spend six months or more every five years, studying part-time with no reduction in salary. They write papers and take exams just as if they were students. Some faculty members may get their re-training at an institute of the Academy of Sciences or they may go abroad to study some special problem. When a faculty member is not going to be re-appointed, he usually finds out about it from discussions in his department and resigns rather than waiting for the University Council to make a formal decision. Thus, actual votes against re-appointment are rare. About 15 or 20 faculty members resign each year for all reasons (including age).

In connection with the statement that Minvuz assigns each vuz to train a certain number of specialists in each field, the question was asked whether the rector had ever found himself in a situation where he believed his budget was inadequate to accomplish what KGU was being asked to do. Such a discrepancy could not occur, he said: "...the state provides us with whatever means are necessary to accomplish the tasks put before us." The university did not even spend all of a sum it had recently been given for new construction, because of the limited capacity of the construction enterprises. "Of course, we would like the expansion to proceed as rapidly as possible, but the wish and the possibility are not always the same....We have to present realistic requests." The university's budget is determined by several factors. The fund for student stipends depends simply on the number of students and the size of the stipends; three-quarters of the students are receiving stipends, which average 40 rubles a month. Faculty salaries depend on degrees, rank, and length of experience, so the salary fund is also readily calculated. If there were disagreements with Minvuz about the budgets, they came over requests for expensive equipment or construction, or if the university had not spent all of its budget, "and then the rector will have a very unpleasant talk with the minister" [said in a half-joking manner--ed.].

> We should not leave the impression that we always get as much money from the state as we want. We are usually allocated an amount of money which corresponds to our interests, but of course every department always wants more.

Not all of KGU's budget comes directly from the state. About 15 percent, or 7,000,000 rubles a year, is derived from research done under contract with various economic enterprises. About 20 or 25 percent of that revenue "is at the disposal of the rector, to be used to develop the material and technical basis of research at the university."

Asked what KGU's most difficult problems had been during the previous ten years, the rector--after a mild protest about "complaining in public"--spoke of "the necessity of training specialists in a way that would permit them to remain high-level specialists many years after their graduation." The problem had been resolved, he said, by improving education in the basic sciences, so that a graduate would easily be able to acquire the additional knowledge he might need later. This raised a further question: Had consideration been given to the possibility of having all students take the same general course of study during their first year or two and entering a specialization only after that? The response was that there is "a general course of studies for the first couple of years in the basic sciences"; nevertheless, further inquiry revealed that transfer among departments was still frowned upon, even if they were closely related.

Ministry of Higher and Secondary Specialized Education of the Ukrainian SSR, October 13

Present during the discussion:

The members of the U. S. delegation
V. A. Bulichenko, head of the foreign relations office, Ukrainian Ministry of Higher and Secondary Specialized Education
Y. L. Butenko, deputy minister, Ukrainian Ministry of Higher and Secondary Specialized Education
G. M. Butov, director of the financial and planning department, Ukrainian Ministry of Higher and Secondary Specialized Education
B. P. Kovalevskii, deputy minister, Ukrainian Ministry of Higher and Secondary Specialized Education
N. N. Orlov, head of the department of instructional methodology, Ukrainian Ministry of Higher and Secondary Specialized Education

Butenko provided data to indicate the magnitude of higher education in the Ukraine. There are 144 vuzes in the republic, of which six were opened during the ninth Five-Year Plan period, just concluded. Four large branches of other vuzes were opened during the same period. Total enrollment is 800,000 students, of whom

more than 270,000 are in extramural programs. During the ninth Five-Year Plan period, more than 600,000 specialists were trained in the vuzes of the Ukraine, about half of them in full-time programs and half in evening and extramural programs. About 100,000 students are admitted each year into full-time study and about 50,000 each into evening and extramural study. Extramural programs are offered in 124 of the vuzes. There are no extramural programs in the medical specialties, or for artists or for specialists in fields where there is a great deal of laboratory work, such as computer technology, construction equipment, and some fields of metallurgy. Otherwise, training is available in all fields in full-time, evening, and extramural forms. About 40,000 specialists complete their training in the extramural programs each year; about 80 percent of them are trained as teachers or for positions in agriculture, trade, and economics. About 10,000 graduate students are enrolled in vuzes subordinated to the Ukrainian Minvuz, but there are others in medical, agricultural, and pedagogical vuzes, the institutes of the Academy of Sciences, and the research institutes of various ministries.

The emphasis on full-time education has been increasing, for three reasons: (1) Full-time education ensures a higher level of training, especially in the basic sciences and in the training of specialists for research and design institutes. (2) The rapid growth of extramural education in the past has satisfied the needs of the population for that form. (3) The number of people entering higher education is going to decrease, as the grandchildren of those who fought in the war reach the higher-education age. In accordance with the decisions of the 25th Congress of the Communist Party, the higher education system must now stress quality rather than quantity. Questions were asked about instructional innovations or other steps being taken to improve quality, but there was no concrete answer.

All extramural students in the Ukraine now follow a two-stage program. In the first stage, when the basic subjects are being studied and students are in special need of assistance, they attend an institution near where they live, regardless of the special field they are going to enter. That makes it possible for them to get their laboratory work done and to consult with professors. "General technical departments" were established at vuzes in areas which otherwise lacked appropriate facilities for this purpose. Students who complete the first stage successfully transfer, for the second stage, to another vuz for training in their special field. This vuz is likely to be farther from their place of residence, but since second-stage students are studying subjects that they deal with every day at their jobs and that are therefore easier for them to understand, they do not have to go to the vuz as often.

Butenko said that "life has proven that this form [of extramural education] is successful," and he was asked exactly what that meant. "What information led you to the conclusion that the system was successful?" In response, he said that extramural students themselves, in public-opinion surveys, conversations, and letters to newspapers and radio and television stations, expressed the opinion that the system was very convenient for them. But "the most objective and complete index of the positive results of the two-stage system is...that the success rate of students [in their courses] has risen and the quality of diploma projects has improved."

What are the steps in planning the number of specialists to be trained in each field? Each branch ministry [i.e., the ministry for each branch of the economy--ed.] collects data from the establishments subordinated to it: the number of specialists they have, the number they will need during the next few years, and the number they expect to be using 20 or 30 years in the future. The ministry checks the figures againsts the norms for each kind of industry and enterprise, and adjusts them in the light of expected developments in that branch of the economy and in the economy generally, and of expected rates of retirement. The ministry sends its analyses and conclusions to the republic Gosplan, which analyzes the data in the same way, but with the ministry rather than the enterprise as the unit of analysis. The republic Gosplan draws conclusions for the republic as a whole and sends them on to the all-union Gosplan, which checks the data again and may increase the numbers of specialists to be trained in the Ukraine to meet the needs of other republics that do not have their own facilities. All-union Gosplan then informs the republic Gosplan of the numbers of specialists needed, and the republic Gosplan transmits the figures to the republic Minvuz, which then develops quotas in each field for each vuz. Because of accumulated experience and the availability of technological aids, the planning department of the Ukrainian Minvuz is able to manage with a "fairly small staff" of 15 to 20 people.

In assigning quotas to the vuzes, Minvuz takes account of the material and personnel resources of an institution, the desirable distribution of specialties at each one, and the geographical distribution of training facilities in the republic as a whole that will minimize the migration of students after they have completed their studies. If an institution objects to its quotas, it will discuss the possibility of revising them with Minvuz. Similarly, if Minvuz believes that the total capacity of all vuzes is not sufficient to meet the plan, it will ask the republic Gosplan to revise the figures or to provide for the construction of new facilities. Just such a problem arose recently in the plans for construction specialists, and at the recommendation of the Ukrainian Minvuz a new Institute of Construction Engineering was opened in Makeyevka.

How are funds allocated among the vuzes? This is done through a number of funding formulae that are derived from enrollments, with students in all specializations (though not in all programs) counted equally. The fund for instructional salaries depends on two factors: (1) the average salary of an instructor in the given vuz, which in turn depends on the number of instructors in each rank; and (2) the ratio of instructors to students which has been set by Minvuz for each form of education--one instructor per 10-13 students in full-time programs (the ratio is at the lower end of this range in the universities, where there are relatively many small classes), one per 25 students in evening programs, and one per 50 in extramural programs. The fund for student stipends is the size of the average stipend multiplied by 0.75 of the number of [full-time] students, because that is "the established proportion of students who receive stipends." To this is added the sum of stipends received by evening and extramural students during the time they are preparing and defending their diploma projects. For maintenance of dormitories, there is an established cost per bed, and this is multiplied by the number of beds, and an adjustment is made for extramural students who live in the dormitories when taking their exams. The fund for cultural and sports activities is calculated by multiplying the number of full-time students by the established cost per student; no allocation is made for evening and extramural students, because they do not normally use these facilities. For construction, there are all-union norms; for example, a technical institute requires 15 to 18 square meters per student. Once a vuz's budget has been determined, Minvuz furnishes that sum of money and it is then up to the rector of the vuz to decide how to allocate it among departments. The total cost to the state of educating a specialist averages 7000-8000 rubles in a full-time program, 4000-5000 rubles in evening and extramural programs.

Soviet participants asked for information about Educational Testing Service (ETS), and several U. S. participants responded. ETS provides entrance examinations and related services on a national scale. These examinations are developed in cooperation with faculty members at higher and secondary educational institutions. Instead of a small number of questions, asked orally and intended primarily to determine whether a person passes or fails, as in the Soviet system of entrance examinations, a typical ETS exam consists of 50 or 100 written questions, with multiple-choice answers, and the score indicates an applicant's level of achievement, or his ability to solve problems, relative to other applicants. Each vuz decides for itself how it will use the scores; some set high standards for their applicants, while others are satisfied with lower standards. Besides test scores, U. S. vuzes consider an applicant's high-school record, in both academic and non-academic activities, and recommendations from teachers, employers, and other people In addition to tests for undergraduate and graduate admissions, ETS also provides

tests for occupational credentials and conducts a large research program. The total staff is 2500, of whom about 250 are professionals. ETS is a public-service, non-profit organization, governed by a body of people chosen mostly from leaders in higher education. It is independent of federal and state governments. Its funds come from the operation of its testing programs, from contracts with federal and other agencies for specific projects, and from foundations for research and development purposes.

A Soviet participant asked whether the "Ministry of Education" in the U. S. had a special department that dealt with instruction in the social sciences and ideological training. U. S. participants responded in several ways: (1) There is no "Ministry of Education" at the federal level. Education in the U. S. is basically a function of the 50 states. The role of the federal government is to provide funds for special programs and projects it is interested in. (2) There is a U. S. Office of Education, but it has no department for social studies or "ideology." Its present major concern in higher education is to ensure that every person who wants a higher education can obtain it, without being prevented by being poor or by being a member of a racial or ethnic minority or by having a handicap such as blindness. (3) Vuzes in the U. S. do not carry out what would be called "ideological training" in the U. S. S. R. Generally speaking, they regard it as their purpose to help students think for themselves and arrive at their own conclusions about social, political, and economic issues. They do not seek to convince students of any particular ideology nor do they require them to hold or express any particular ideological viewpoint.

Kiev Institute of the Food-Processing Industry, October 13

Present during the discussion:

The members of the U. S. delegation
Vladimir A. Anistratenko, vice rector for instruction, Kiev Institute of the Food-Processing Industry
Vladimir T. Garyazha, vice rector for scientific work, Kiev Institute of the Food-Processing Industry
Ivan S. Gulyi, rector, Kiev Institute of the Food-Processing Industry
Aleksandr Z. Palamarenko, dean of the extramural department, Kiev Institute of the Food-Processing Industry
Anna V. Yatsenko, senior scientific associate, Kiev Institute of the Food-Processing Industry.

Gulyi described the Kiev Institute of the Food-Processing Industry (KIPI). It was founded in 1930, but its physical plant

was virtually destroyed by the Nazis in 1943 and it was reconstructed after the war. It now has five classroom buildings, a library with 1,000,000 volumes, a food-processing plant for research and for students' practical experience, five dormitories, and a sports and recreation camp outside the city. The faculty numbers 430, of whom 30 have doctoral degrees and 235 kandidat degrees. In addition, there is a research staff of 410 people. KIPI performs research under contracts with enterprises in the amount of 2,000,000 rubles a year. Most of the faculty also participate in the research; a faculty member may be paid extra for his research, up to half his salary.

KIPI trains 11 kinds of specialists, through 34 programs organized in five departments of full-time study and evening and extramural departments. The full-time departments are: baking technology, including production of alcoholic beverages; sugar technology, including vitamin production and microbiology; meat and milk products; food-processing machinery, including industrial-thermal energetics; and the economics and automation of food processing. The evening department trains engineers in the same fields except for sugar technology and meat and milk products. The extramural department trains students in "five major groups" during the first three years of study and in eight specialties beginning with the fourth year. Enrollments are 4500 in full-time study, 1250 in evening, and 2650 in extramural. More than 500 engineers are graduated annually from the extramural programs alone.

Admission to full-time study is conducted separately for two groups of applicants: those who have had less than two years of work experience and those who have had more.[5] The entrance examinations required are the same for both groups, as they are for applicants to all technical institutes: mathematics, physics, written and oral examinations in language and literature (which at KIPI may be either Russian or Ukrainian), and chemistry. About 20 percent of admissions come from the institute's preparatory program, which has a ten-month course of study for full-time applicants and a half-year course for evening and extramural applicants. Admission to the preparatory program is by interview; no examinations are required.

Minvuz issues a study plan for the training program in each specialty. This plan gives the required subjects and the number of hours in each. There are required courses in the general scientific and general engineering fields, and other required courses in philosophy, history, scientific communism, economics,

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[5]There was some confusion in the discussion at this point; the dividing line between the two groups may be six rather than two years of experience.--Ed.

and fundamentals of management. A question was asked about the language of instruction; the answer was that most courses were taught in Russian, because all students understood it, but there were no rules about it--"it's up to the instructor and the students." Another question was asked about the reference to "five major groups" in the first three years of study in the extramural department, in view of the understanding that, in the "two-stage" program of extramural education, all students took the same subjects in the first three years; but this question was not clearly answered.

The U. S. participants responded to questions about the system of higher education in their country:

--Extramural education is less extensive and less of a formal system than is apparently the case in the Soviet Union, perhaps because such a large proportion of U. S. students have been enrolled in full-time higher education. However, there is probably wider experimentation with different kinds of instruction.

--In the most renowned vuzes, there may be ten applicants for each opening. On the other hand, there are some vuzes, especially two-year community colleges, that admit all applicants who have completed secondary school and even some that admit applicants who have not completed secondary school. In California, which has one of the best-developed community-college systems, about 70 percent of students who begin college are in a two-year vuz, and about 40 percent of students who complete a two-year vuz transfer to a four-year vuz. Students who do transfer are treated just like students who began at the four-year vuz; they are not required to take any additional courses.

--Most of the courses a student takes are his own choice. There are no national "study plans" comparable to those used in the Soviet Union. Each vuz sets its own requirements, but will usually require only a few subjects, such as English and mathematics. In a given field of specialization, there are usually departmental requirements, but students have a wide choice among fields and may even change from one field to another fairly easily. The total number of hours required for a degree is the same for all fields within the same vuz.

--There is no regular system for improving the skills of faculty. However, most institutions provide for "sabbatical leaves," which permit a professor, usually every seven years, to have a full year off at half pay or half year off at full pay; the professor is expected to use that time to improve his knowledge. It is also probably true that the professor in a U. S. vuz spends less time in the classroom than does his Soviet counterpart--usually six hours a week at high-prestige vuzes and

up to 12 hours a week at others--so that he has more time to spend in keeping up with his field and doing research.

--The number of scientists in a lecture class varies a great deal. For the U. S. as a whole, there are about 20 vuz students for each faculty member, but individual classes may be as large as 1500. As an illustration of the variation even within one vuz: At the University of Texas, which has 42,000 students, the minimum class size is 10 for undergraduates and 5 for graduates, and the average class size is 25 to 30, but some first-year courses have as many as 500 students for lectures, although junior instructors will then meet with smaller groups.

--Television is being increasingly used in instruction; while it has the advantage of bringing the best professors to large numbers of students, it has the disadvantage of imposing the same pace on everyone. It does have some unique special uses, such as allowing an entire medical class to watch an operation "close up." The use of technological aids to instruction is increasing especially rapidly at the community colleges; some of them have "media centers," where films, filmstrips, television, computers, etc., are brought together for the student to use at his own pace. There is no "national system" for the use of technological aids.

Kiev Institute of Civil Engineering, October 14

Present during the discussion:

The members of the U. S. delegation
Mr. Chubuk, vice rector, Kiev Institute of Civil Engineering
Mr. Ozhogin, head of department of teaching machines, Kiev Institute of Civil Engineering
Y. A. Vetrov, rector, Kiev Institute of Civil Engineering

Vetrov said that the Kiev Institute of Civil Engineering (KISI) graduates about 1500 engineers annually. It has 12 departments and 40 instructional programs, offering specializations in nine fields--industrial and civil construction, architecture, urban construction, water supply, heating and ventilation technology, engineering geodetics, construction and road-building machinery, automation of construction, and automation of managerial systems. There is a department for improving the skills of both faculty members and working engineers in fields related to construction. KISI serves as a "scientific center" for its region. It conducts a great deal of research, financed either by direct governmental appropriations or by contracts with industrial ministries and other organizations. It is one of the few institutes to have been awarded the Red Banner of Labor.

Instruction is offered in full-time form, with a five-year course of study, and in evening and extramural forms, with a six-year course of study; 55 percent of the students are in full-time programs, 25 percent in evening, and 20 percent in extramural. Extramural students must be working in the field in which they are studying. The proportion of students in full-time enrollment will increase in the future. Asked why, Vetrov said that, in his opinion, there were three reasons: (1) Full-time education allows for the greatest influence on the student over the longest period of time. (2) Full-time students are younger and so they learn more readily. (3) The country's standard of living is rising, "so it is no longer necessary to devote so much time to working."

KISI receives about three applications for each opening [referring presumably to the full-time programs--ed.]. Vetrov said that the level of preparation of entering students seemed to be rising; he attributed this to improved instruction in the secondary schools. Two-thirds of the full-time students are workers or collective farmers or come from worker or collective-farmer families; one-third are white-collar employees or come from white-collar families. Many students are the children and even the grandchildren of construction workers; this is a tradition in the industry. Up to 20 percent of the students admitted each year come from the institute's preparatory program, which has been in operation for five years. Students from the preparatory programs often do not do well in the first year, but later they catch up to and even surpass the other students, because they have strong motivation and high self-reliance.

The extramural and evening departments function under the two-stage plan. The first stage is three years, when all students in these departments "study in the general technical departments under the same study plan, regardless of specialization." All the major cities of the Ukraine have general technical departments which offer first-stage instruction. KISI itself has such a department in Cherkassy, 200 kilometers from Kiev; students who complete their first-stage courses there continue their training at KISI.

Three-quarters of the full-time students receive stipends. The main criteria for award of a stipend are the student's academic record and his record of participation in civic activities. Asked for more details about these "civic activities," Vetrov mentioned participation in the student scientific society, volunteer work for the trade-union organizations, "helping to decorate the clubroom in the dormitory," participation in sports or drama, or active membership in the Komsomol. Also, "there must be no negative elements in the student's behavior--for example, if a student treats an instructor with disrespect, or does not attend classes, those would be arguments for depriving him of his stipend." The size of the stipend increases as the

student moves from one year to the next. Also, a student who receives all "excellent" grades receives a stipend 15 percent above the usual one, and for outstanding students there are special "named" stipends, twice as great as the usual ones. However, even the ordinary stipend is sufficient to cover the costs of room and board and transportation. Asked how the 25 percent of the students who did not receive stipends were supported, Vetrov answered that they "are financed indirectly"--i.e., there is no tuition, and use of the library and dormitory is free. "Also, the rector has a fund at his disposal, which he can use to help a student in material need." The trade-union organization has a similar fund. "If a student does not have parents, he has the opportunity to work during the summer to supplement his income."

There are 650 faculty members at KISI, of whom 10 percent have either a doctoral degree or the title of professor and about one-third have either a kandidat degree or the title of assistant professor. Some of the instructors also have a kandidat degree. In all, about 60 percent of the faculty have advanced degrees or titles. As an illustration of "the kind of faculty that this institute has," Vetrov recounted his own career. He studied at KISI from 1935 to 1940, specializing in bridge construction. He began work, but soon after entered the armed forces, and he "experienced the war fully." After the war, he entered graduate school in Moscow, received his kandidat degree in 1949, and was appointed an instructor at KISI. He later became an assistant professor, then program head, and finally rector. He still serves as head of the program in building machinery. The appointment of every faculty member must be renewed every five years, and if a faculty member has not kept up with his field, he will be denied re-appointment.

Kiev Institute of Civil Aviation, October 14

Present during the discussion:

The members of the U. S. delegation
A. Aksenov, rector, Kiev Institute of Civil Aviation
Other members of the administration and faculty of the Kiev Institute of Civil Aviation

The Kiev Institute of Civil Aviation (KIIGA) was founded in 1933. Its physical plant was destroyed in the war; the first stage of reconstruction is just ending. Full-time enrollments are 6500 (with an increase to 7000 planned by 1985, when reconstruction is to be completed), and extramural enrollments are 5500. A unique feature of KIIGA is that its students come from specially designated "admissions zones." The institute has an admissions

board, as well as a branch and an academic consultation point, in each of nine cities: Magadan, Yakutsk, Khabarovsk, Novosibirsk, Tashkent, Alma-Ata, Minsk, Rostov, and Kiev. (A request was made to visit the academic consultation point in Tashkent, but the response was that the examination sessions were over and "there is nothing going on there now.") Thus, the nationality composition of the institute "fully reflects the nationality composition of the whole population." KIIGA students are of 100 Soviet nationalities and 50 foreign countries.

KIIGA has ten departments and 50 instructional programs. It trains engineering and economic specialists in the maintenance of aircraft and in the construction and operation of airports; it does not train aircraft design specialists or aircraft operating personnel. It is subordinated to the Ministry of Civil Aviation, which also provides its budget, but it is responsible to Minvuz with respect to study plans and instructional methods.

Extramural programs began at KIIGA in 1948. The same specializations are offered as in the full-time programs, but the course of study is six instead of five years. Only persons already working in civil aviation may be admitted to the extramural department. Students have a paid leave of 30 days in each of the first two years of study and 40 days in the subsequent years.

Ministry of Higher and Secondary Specialized Education of the Uzbek SSR, October 16

Present during the discussion:

The members of the U. S. delegation
G. A. Abdurakhmanov, minister of higher and secondary specialized education of the Uzbek SSR
D. A. Abdurazakova, deputy minister of higher and secondary specialized education of the Uzbek SSR
K. I. Afanas'yev, deputy minister of higher and secondary specialized education of the Uzbek SSR
Ya. T. Babakhanova, director of the program in English language of Tashkent State University
U. N. Tursunov, deputy director of the Administration of Personnel and External Relations of the Ministry of Higher and Secondary Specialized Education of the Uzbek SSR
E. O. Umarov, deputy director of the Administration of Vuzes of the Ministry of Higher and Secondary Specialized Education of the Uzbek SSR

Abdurakhmanov told of the huge increase in higher education in Uzbekistan since 1917. Before the revolution, the only vuzes were

religious institutions; today, there are 43 vuzes offering more than 200 different specializations. In 1920, there was only one Uzbek with a higher education; he had received it in Moscow, and when he returned to Uzbekistan, a holiday was declared in his honor. Today, there are about 360,000 people with higher education in the republic. About 1200 foreign students are enrolled in Uzbek vuzes, including several from the U. S. (and the wish was expressed to have more). Instruction is carried on in the Russian, Kazakh, Kara-Kalpak, Tadzhik, Tatar, and other languages, though 70 percent of instruction is in Uzbek. Many Uzbeks study in the vuzes of other republics.

The Uzbek Minvuz has a staff of more than 120 people. The minister is a philologist, with a specialization in Turkic languages. The ministry has jurisdiction over 12 of the republic's vuzes. The Ministry of Education has jurisdiction over the 16 pedagogical institutes; the Ministry of Culture, over institutes of literature and music; and the ministries of health, agriculture, and transportation, over institutes in those fields. Minvuz, however, is responsible for entrance examinations at all vuzes, has general administrative functions for them, and reviews their annual reports. In turn, it discusses its problems with the All-Union Minvuz, which sometimes modifies its plans or assigns certain tasks to it.

More than 40 percent of the students are enrolled in extramural programs. The course of study is six years, but plans are being laid to shorten this by eliminating subjects that students do not use. In general, the change will be away from theoretical subjects and toward the practical needs of the students. At the end of two or three years, the students will receive a certificate. Then there will be another two years of study, and another certificate. Students will receive a diploma by presenting the appropriate number and kind of certificates. When the student has received his first certificate, his skill grade is raised and his salary is increased. This is an experiment that is being conducted all over the Soviet Union.

The cost of training a specialist in a full-time program in a technical institute is about 8000-9000 rubles a year; in the pedagogical institutes, it is about 4000-5000 rubles. In evening programs the cost is about 45 percent lower, and in extramural programs about 70 percent lower. About 70 percent of the finances of the Uzbek vuzes comes from the state budget; the rest comes from enterprises for which the vuzes train specialists.

Abdurakhmanov was asked if there was any current experimentation with new instructional methods. He responded that the ministry has scientific councils dealing with the curriculum in each field. "They present their recommendations to the ministry, and if they are adopted, the vuzes are informed." Another kind of change that has recently been introduced is that a special joint committee of Minvuz

and the employing enterprises monitors the work of the graduates for a year after they have completed their studies; at the end of the year, the committee determines each graduate's job classification and skill grade.

A substantial part of the discussion was devoted to efforts to learn more about the process of planning the numbers of specialists to be trained in each field. The requirements for specialists are determined by a joint commission of the republic Gosplan and Minvuz, working in cooperation with the All-Union Gosplan. In addition to the needs for new specialists, plans are made to provide higher education to specialists already working in the field but without the appropriate training; for example, about 30 percent of specialists in chemical technology lack a higher education. Because of the planning that is done, a student knows when he enrolls that there will be a job for him at a particular enterprise. When asked what happens if the enterprise for which a student was being trained no longer needs his specialization when his training is completed, Afanas'yev said that the economy was being planned at the same time the educational system was, and there were not such great changes in the economy as to cause serious disparities. "Of course, inevitably there will be minor changes at small enterprises--maybe 10 or 20 people will not be needed, but then they can find work in other republics." There were no surpluses of people in a given field, because "we have been planning since the founding of our state, and we have plans now that tell us how many specialists will be needed in each field up to 1990." Since all enterprises are state enterprises, all work according to the state economic plan. The five-year plans allow for annual revisions, but these are of the order of five percent and so do not influence the general manpower supply.

Tashkent State University, October 18

Present during the discussion:

The members of the U. S. delegation
A. I. Afanas'yev, deputy minister of higher and specialized secondary education, Uzbek SSR
A. T. Azizkhanov, prorector of Tashkent State University
P. B. Azizov, prorector of Tashkent State University
T. A. Sarymsakov, rector of Tashkent State University
Kh. M. Tashkuziev, prorector of Tashkent State University

Tashkent State University (TGU) was founded in 1920. It has seven science departments--pure mathematics, applied mathematics, physics, biology, chemistry, geology, and geography--and six humanities departments--history, law, journalism, philology, oriental studies, and foreign languages (French, German, and English). It also has a department of advanced studies, where

specialists can take special courses that they may need. Of the 1500 faculty members, half have either doctor or kandidat degrees or have the title of professor.

About 16,000 students are enrolled in TGU, about 8000 in full-time programs and 4000 each in the evening and extramural programs; more than 300 of them are graduate students. The number of full-time students will increase by five or ten percent during the current Five-Year Plan, while the number of evening and extramural students will increase by a smaller amount. The increases in the number of full-time students will be mostly in the fields of mathematics, physics, and law; the numbers of students in Oriental studies, philology, and chemistry will not increase.

The rector was asked whether the "two-stage" system in extramural education was in operation at TGU, but there was some confusion on this point. The rector at first replied that it was, but later said that it was not, since it was designed for use only in technical institutes.

The rector was also asked if it would be possible to obtain copies of course examinations in mathematics or physics. He said it would be (though none were actually forthcoming), and he went on to explain that the examination questions are based on study plans, issued by Minvuz, "in which everything to be studied is described in great detail." He was then asked what an instructor was to do if students were having difficulty with a topic and the instructor felt it was important to spend additional time on it, thus leaving less time for another topic. The course plans, he replied, "are not dogma." An instructor can take special circumstances into account, and instructors also vary in their presentations and their relative emphases among different topics These differences are reflected in the examination questions "only to a slight extent," but students can "be given extra hours" on particular topics "in order to bring them to the point of equality with other students."

When asked what he thought would be the "one or two main problems" that would face TGU in the next year or two, the rector spoke of a "concern to introduce the results of our scientific research into our industrial and agricultural enterprises." Students participate in research from their very first year of study. Asked what administrative problems he faced as rector, he said, "I have no serious administrative problems, because everything is planned beforehand and everything is done according to the plan." Asked if he was satisfied with the extramural system, he said he was, although "each period brings changes. In the future, we might want to shorten the period of extramural studies. Life itself will tell us what to do." When asked what "life itself" meant, he gave the following example: There had been "a great deal of difficulty" with the extramural program in geology, so it was terminated about ten years ago. But then the university began

getting letters from people employed in the field, saying they needed the training and could obtain it only in the extramural form. So the decision was made to reopen the program.

Information was requested about the system of faculty re-training and re-appointment. The re-training deals with both the field of study and teaching methods. About 90 percent of the faculty members are re-appointed at the conclusion of their five-year term.

Tashkent Polytechnical Institute campus at Chirchik, October 18

Present during the discussion:

K. I. Afanas'yev, deputy minister of higher and secondary specialized education of Uzbek SSR
K. S. Akhmedov, rector, Tashkent Polytechnical Institute
U. A. Ikramov, prorector for evening and extramural study, Tashkent Polytechnical Institute
R. A. Kholmukhamedov, assistant dean of the Chirchik campus, Tashkent Polytechnical Institute
I. M. Mirkhodzhayev, first prorector, Tashkent Polytechnical Institute
A. A. Niyazov, assistant dean of the General Technical Department, Tashkent Polytechnical Institute
T. B. Sabirov, head of the chemistry program at the Chirchik campus, Tashkent Polytechnical Institute
U. N. Tursunov, deputy director of the Administration of Personnel and External Relations of the Ministry of Higher and Secondary Specialized Education of the Uzbek SSR
D. U. Umarov, dean of the Chirchik campus, Tashkent Polytechnical Institute

Akhmedov described the history and organization of the Tashkent Polytechnical Institute (TPI). It was formed in 1933 out of one of the departments of Tashkent University. In 1973, upon the celebration of the 1000th anniversary of the birth of the Uzbek scientist A. R. Beruni, the institute was named for him. It is now one of the largest polytechnical institutes in the Soviet Union, with 15,000 full-time students, 14,000 evening students, and 4000 extramural students. By the end of the current Five-Year Plan, the proportion of full-time students will increase to 60 percent from the present 42 percent. There are also about 350 graduate students. TPI has 12 departments of full-time study and 20 departments of evening and extramural study, offering a total of 66 specializations. Some departments have become separate institutes--for example, the Fergana Polytechnical Institute, the Samarkand Institute of Architecture and Construction, and the Tashkent Automobile Institute. Consideration is now being given to the formation of a Tashkent Construction Engineering Institute

on the basis of TPI's departments of industrial and civil construction, agricultural construction, and architecture. The branch in Bukhara may be converted into a separate engineering institute.

TPI had 9000 applications for admission to full-time study in 1976--three applications for each opening. Nearly half of the applicants had a secondary-school grade average of 4.5 or higher, which meant that they had to take only two entrance examinations instead of the four ordinarily required. Those who are not admitted to full-time study are notified in August and can then apply for evening or extramural study; these departments admit students in September. Others go to work and may apply again the following year. Often they attend the institute's preparatory courses. Very few evening or extramural students transfer into full-time study, because they "are already working and are reluctant to give up their pay. Their stipend as full-time students would not be enough to support their families."

The Chirchik campus is one of eight branches of TPI outside of Tashkent. Like most of the others, it has only evening and extramural programs. Enrollments are 1800 and 250, respectively. A complete six-year curriculum is offered in seven specializations--industrial technology, chemical technology, machine-building technology, power technology, electrical machinery, automation of chemical production, and industrial and civil construction. Apparently, in other specializations only the first three years are offered, and students then have to transfer to programs offered from the main campus in Tashkent.

Several questions were asked about the organization of extramural education under the two-stage plan, but again there was considerable confusion. One answer was that, since 1972, there has been a unified study plan for the first three years in each of five areas--geology, mining, energetics, machine-building, and economics. On the other hand, it was also said that the number of study plans had not been reduced in 1972 but rather that the plans had been revised so that they put greater emphasis on the fundamental and general-education subjects--economics, organization of production, mathematics, physics, chemistry, strength of materials--and less emphasis on applied subjects, such as machine set-up and technical safety, that students would be able to learn on the job. Furthermore, it was mentioned that within each of the five areas there are between 10 and 20 specializations (for example, in energetics the specializations include electric-transmission networks, electrical machinery, urban electricity supply, electric generating stations, etc.), and "each such specialization has its own study plan." Still another statement was that the general-education curriculum subjects are the same in each of the five areas, although "the number of hours for each of the fundamental subjects varies

among different groups of specializations--in some, mathematics is most important, in others, it is physics." Copies of study plans and of examinations were requested and promised but were not brought.

Questions were also asked about the procedures for determining the numbers of specialists to be trained in each field, but no new information was provided.

State Planning Committee of the Uzbek S.S.R., October 19

Present during the discussion:

The members of the U. S. delegation
Gulyam Salikhovich Talibov, deputy chairman of the State Planning Committee of the Uzbek S.S.R.

Talibov gave a general description of the procedures by which manpower needs are determined. The republic Gosplan proposes production goals to the enterprises; the enterprises respond and Gosplan reviews the responses to ensure that the enterprises are considering their full production possibilities. When the production goals have been set, Gosplan estimates the numbers of specialists that will be needed in each field: the number needed for expansion of production, the number needed to replace those who will retire or die, and the number needed to replace the praktiki [those who are employed at a job without having the proper academic credentials--ed.]. The number of specialists on hand is deducted from the total, and this gives the number of specialists that will have to be trained. If the need is for at least 25 specialists in a field, they are trained within the republic; if the number is smaller, they are trained in other republics. Plans have been prepared covering the needs for specialists up to 1985.

How is it possible to determine manpower needs so far in advance, particularly in a rapidly changing field such as, say, computer utilization? In the Academy of Sciences there is a Cybernetics Institute that studies such problems; it knows, for example, how many computers are going to be installed and how many specialists of each type are needed for each installation. There is a similar institute for each branch of industry.

But what about the specialists who develop new computers and new uses for computers--how can the "need" for them be anticipated? Eight years ago, a commission was established consisting of representatives of industry, Gosplan, the vuzes, and the Academy of Sciences, and this commission drew up a plan which showed how many mathematicians were needed to support a computer, and how many engineers, how many information-processing specialists, and so on.

Departments for training them were set up in the vuzes, and now more than 500 specialists in this field are graduated annually. More than that are needed, but it was impossible to create the necessary material base and the faculty more quickly. The development of the entire Soviet economy is planned, and this planning has been going on for 60 years, so there is a great deal of experience to rely upon.

Has there never been any "overproduction" of specialists in any field? No. Sometimes it may turn out that there are more engineers than are needed, but if so, Minvuz is informed, reduces the number to be trained over the next two or three years, and makes plans for retraining the engineers in other fields where they are needed. "Life presents us with our problems and corrects our efforts."

If adjustments have to be made to take account of unanticipated needs, do they have to be approved by the all-union Gosplan? Such adjustments are made only in the Five-Year Plan, and then of course they would have the approval of the all-union Gosplan.

But if the need for adjustment becomes evident during the course of a Five-Year Plan, can't changes be made before the plan period has ended? The plan is reviewed by the republic Gosplan once a year. There are no great changes from one year to the next. This presents no difficulties.

If adjustments do have to be made during the year in the number of specialists to be trained in a particular field, how is it decided which students are to change their field of study? Only a few students are affected, and such small changes are not the concern of Gosplan.

Samarkand Agricultural Institute, October 20

Present during the discussion:

The members of the U. S. delegation
R. L. Kasparov, vice rector for extramural education, Samarkand Agricultural Institute
M. N. Nurmukhamedov, vice rector for improvement of faculty skills, Samarkand Agricultural Institute
A. Saidov, assistant dean of the department of karakul culture and technology, Samarkand Agricultural Institute

Kasparov pointed out that the Samarkand Agricultural Institute (SSI) is one of the largest vuzes in Central Asia. Since its founding in 1929, it has trained 13,500 agricultural specialists, of whom 1100 were specialists in karakul culture and technology; others were agronomists, zoötechnicians, and veterinarians. It has also retrained 15,000 agricultural specialists. Currently, it

accepts about 800 students a year into full-time and extramural programs and graduates about 750 a year. Most of the full-time students come from Uzbekistan and the other Central Asian republics. Enrollment in extramural programs is 1800, and there are 150 students in the preparatory division. There is also a department for the improvement of faculty skills, with an enrollment of 250. The faculty of SSI includes 19 professors with doctorates and 140 instructors with kandidat degrees. Faculty members are very active in bringing the results of research to the collective farms, through reports, lectures, and consultation.

Kasparov was asked how the SSI increased the number of students enrolled in a specialization when the institute's plan called for such an increase. He said that had never been a problem because there were always more applicants than openings. Is the proportion of students in full-time study going to increase, as it will at other vuzes? "The emphasis on full-time study will increase, but there will be no weakening of the attention given to extramural study." What led to the decision to increase emphasis on full-time study? "There is less need for re-training older specialists, and the younger people prefer full-time study." Did full-time students seem to be better trained than extramural students? "That is bound to be true. Nevertheless, a significant proportion of extramural students have good knowledge and a high level of preparation." Did extramural students have higher dropout rates than full-time students? "It is very rare than extramural students drop out before completing their studies."

What role does the Communist Party play in the management of the SSI? "We have a Party organization, and as a rule we all work under the guidance of the Party." How are decision-making powers divided between the staff of the SSI and its Party organization? "Each makes the decisions that are within its own competence, but we work together, in full harmony, to fulfill the tasks presented to us. There are no disagreements between the Party and the administration of the SSI." Then why is the Party organization needed? "The line of the Party guides the entire country." Could you give some examples of recent decisions of the Party organization that affected the SSI? "That is not within my competence." Could we discuss these questions with the secretary of the SSI Party organization? "No--he is in the fields with the students, gathering cotton."

Scientific-Research Institute for Problems of Higher Education, October 22

Present during the discussion:

The members of the U. S. delegation
The members of the Soviet delegation

The U. S. participants all agreed that the Soviet educational system was too large and complex to be fully understood after a three-week visit, despite all the help and hospitality they had received. The problems of understanding were compounded by the language barrier, and by differences between the Soviet Union and the U. S. in both the goals and the forms of education. Nevertheless, the participants ventured to present some observations, emphasizing that they were tentative and intended chiefly as bases for discussion and for future research.

Cross concentrated her remarks on extramural education. What most impressed her about it was the success in establishing close and meaningful relationships between work and study. This is presumably consistent with what appears to be the major purpose of Soviet education: to train high-quality members of the labor force. The personal development of individuals is emphasized less than it is in the U. S. educational system. Yet, despite the great contributions of extramural education to the accomplishment of Soviet purposes, it was surprising to find that full-time study is everywhere regarded as the most desirable and most prestigious form of education. The explanation given was that full-time study was more efficient and effective, but no research evidence was offered to support that proposition.

There seems to be less experimentation and innovation in Soviet extramural education than in the U. S. Educators in the U. S. search for diversity and try a number of different approaches in efforts to find those that work well for people with different goals and different needs. But Soviet educators give the impression that they are looking for a single best model which would then be offered to everybody.

One of the most attractive aspects of Soviet extramural education, especially by contrast with U. S. "correspondence" study, is the amount of personal attention given to students--the interest and financial support coming from the enterprises, the fact that the educational institutions accommodate extramural students in their dormitories and give them opportunities to interact with their faculty. However, relatively little seems to be done to maximize the educational impact that students often have on each other.

Feldmesser's remarks focused on research questions in the area of socioeconomic differences between full-time education, on the one hand, and extramural and part-time education, on the other. There

are three possible dimensions of such differences. (1) Differences in the socioeconomic position of the families of students in the two types of education. While there are no tuition fees and most students receive stipends, the U. S. participants were told that most students who receive stipends were also receiving help from their families, and that transfers from full-time to part-time education were sometimes the result of the loss of income consequent upon the death of a parent. These facts suggest that stipends may not be sufficient for students from lower-income families, who may have to work and therefore to attend extramural or part-time forms of education more often than students from higher-income families. In addition, the U. S. participants were repeatedly told that about 25 percent of students did not receive any stipend, and that naturally raises the question of how they are supported. It is also conceivable that, if vuzes have a limited amount of funds for stipends, they may take different attitudes toward the application of a student who needs a stipend and the application of one who does not. Another aspect of socioeconomic differences among students is that graduates of rural secondary schools apparently show less academic strength, on the average, than graduates of urban schools. Are the former, then, more likely to be channeled toward extramural and part-time education?

(2) The kind of education that students receive. For example, the two types may differ in their relative emphasis on theoretical and practical subjects. Some of those with whom the U. S. participants spoke said that extramural and part-time education emphasized practice, because students in that form of education would probably follow occupations which demanded practical rather than theoretical knowledge. But others said that extramural and part-time students already had practical experience and thus had less need to learn practical skills, and relatively more need for theory, than full-time students did. Also, if full-time education is regarded as preferable, and extramural and part-time education as only temporary necessities, it may be that full-time education is more amply provided with resources--better physical plant and equipment, better-paid instructors, etc.

(3) The kinds of benefits students may receive from the two types of education. There may be differences in career lines consequent upon the type of education, and also differences in "life satisfaction"--a student's ability to enjoy and to contribute to the cultural and social life of the community. Such differences might be desirable, insofar as they are related to the different kinds of needs and interests that students had. But they can be a matter of social concern if they are related to the first dimension, so that students from one kind of socioeconomic background have careers and prospects that are systematically different from those coming from other kinds of background.

Lastly, Feldmesser observed that, "more often than I liked," the answer given to questions asked by the U. S. participants was,

"We have no problems in that respect." This happened particularly often when the questions concerned socioeconomic differences. No systematic research in this area seems to have been done, and the impression was even given that research was unnecessary because the answer was already clear. Phrases like "Life itself dictates that...," or "Experience proves that...," were often heard. But "life" and "experience" are complex and often seem to "tell us" contradictory things. To a U. S. researcher, answers to questions are not certain until after appropriate data have been collected. Feldmesser expressed the hope that NIIVSh would initiate the needed research and that U. S. and Soviet researchers would be able to investigate questions of socioeconomic differences in education in both U. S. and Soviet society.

Glenny's observations dealt chiefly with educational planning. It appears that sometimes republic ministers and vuz rectors place greater importance on local than on national concerns--a tendency not peculiar to the Soviet situation. Also, people at the local level seem to believe that all-union officials were unwilling to admit error or make changes in plans. The data system for republic-level planning is not adequate to the needs. Budgeting for manpower needs is apparently based on historic norms, with no adjustments for changing costs. The primary method for determining costs relies on student-faculty ratios by type of program; this method has been used in the U. S. for many years but is now being replaced by more sophisticated methods. Funds received by vuzes from research and service contracts with enterprises give them some short-run flexibility; but, as in the U. S., this source of income is mostly limited to the natural sciences and economics. Not much was learned about faculty salaries, but it does appear that the difference between the highest and lowest salaries is much greater in the Soviet Union than in the U. S.--perhaps as much as 10 to 1 compared to 3 or 4 to 1. On the whole, the problems noted in the relationships between ministries and institutes at the republican level and the central ministries and Gosplan are similar to problems in those states of the U. S. where there are strong coordinating agencies for higher education. The planning methods may be different, but the kinds of disagreements are the same and so is the need for negotiations between levels to deal with the political realities of resource availability.

Kuznetsov commented on some of these observations. Personal development does not receive less attention in the Soviet higher educational system than in the U. S. Almost all Soviet vuzes are specialized; students express their personal interests by choosing to attend a particular institution, and then by specializing further within that institution. There is also flexibility, as in the choice of elective courses. But, since society creates the conditions for education, educators have a responsibility to guide students into those areas where they can make a fruitful contribution. That explains why extramural education will grow more slowly than full time. More and more, full-time study is required for a person to

become a fully trained specialist. It is difficult to work and study at the same time, and Soviet society can now afford to support more students in full-time study. It is true, though, that stipends are still not sufficient, and in practice students' families do have to help them.

As extramural education is needed less for the training of specialists, it can play another social role--that of meeting the personal, spiritual needs of the individual and raising the educational level of the population. A taxi driver can study philosophy at Moscow State University not in order to change his occupation but simply to meet his spiritual needs, his needs for broader knowledge.

The financial support and the quality of the physical plant and the faculty are not lower in extramural education than in full-time education. Of course, there are variations from one institution to another; it is generally recognized that Moscow State University has the best faculty. But there are more faculty members with the title of professor in Professor Gudkov's institute [the All-Union Polytechnical Extramural Institute] than many institutes have in their full-time-study departments. As for faculty salaries, a professor with ten years of experience receives 5400 rubles a year; if the professor is also head of a program, it is 6080 rubles a year, and if rector of an institute, 7200. A beginning instructor receives 1440 rubles a year.

Zakharov also commented on some of the U. S. participants' observations. If questions were often answered with "We have no problems," it was not because of shortsightedness, blindness to deficiencies, or a concern for orthodoxy. It probably testified more than anything else to the lack of time for more complete answers. The close relationship between educational institutions and productive enterprises in the system of extramural education is something of which Soviet educators are proud. The occupational skills of the students have been made an organic part of the learning process. Full-time study does give more systematic, theoretical knowledge, but this is not a criticism of extramural study, which has proven its viability. Extramural and part-time education are specifically devoted to the training of specialists for the economy. Intellectual demands can be met in the People's Universities, the Knowledge Society, the system of technical refresher courses, and other forms of education under the sponsorship of public organizations and trade unions--all of them free.

It is true that not enough research has been done for the improvement of extramural education, but it is beginning now; for example, the Ministry of Railways recently decided to establish a laboratory at the All-Union Railway Engineers Extramural Institute for the improvement of methods in extramural instruction in the field of transport. It is also true that there is not optimum contact between faculty and students in extramural institutions, but new methods are being developed. Students do have ample opportunities

for communicating among themselves--for example, through contacts with colleagues at their places of work. "They may even have more communication than necessary, especially when doing tests and individual assignments!"

The size of the stipend fund does not put a limit on the number of full-time students. The fund is less than 8 percent of the expenditures for higher education. The limit on the number of full-time students arises rather from the shortage of labor and the consequent reluctance to take workers away from production.

The question of whether an elite is being trained in the full-time-study program and a second-class group in extramural study may be interesting to the U. S. participants, but not to Soviet educators. The initial differences between full-time and extramural students disappear over time, because of the greater stress on independent work for the extramural students and because they are in continuous contact with the subject in which they are being trained. They make more rapid intellectual growth and attain professional maturity sooner. There are no plans for training first-rate and second-rate specialists. "This is not a problem for us."

Ministry of Higher and Secondary Specialized Education of the USSR, October 22

Present during the discussion:

Members of the U. S. delegation
V. N. Chetverikov, director, Scientific Research Institute on Problems of Higher Education
V. M. Kuznetsov, vice director, Scientific Research Institute on Problems of Higher Education
N. N. Sofinsky, deputy minister, Ministry of Higher and Secondary Specialized Education of the USSR

Sofinsky expressed pleasure at the present state of cooperation with the U. S. in the field of higher education. He said that the Institute for Problems of Higher Education had given him a list of proposed topics for cooperative research with U. S. scholars; the topics were occupational guidance and selection in higher education, nontraditional forms of education, planning for the training of specialists, technological aids to education, and the content of education and equivalency of degrees on the level of the Soviet candidate of sciences degree and the U. S. doctor of philosophy. Sofinsky said that, though this was a good list, he would like to add one more topic: the development of common instructional programs in the natural and technical sciences. "Some people may think this is unnecessary, but it seems to me that among the multiplicity of programs in a scientific field, only one can be the best. Why should it not be provided to the entire world?" The procedure might be to

compare programs, select the best Soviet program and the best U. S. program, and then form a combination of the two. If these topics were agreed to, a plan could be formulated that would contain steps for implementation, a time schedule, and the names of the persons who would carry them out.

Another important subject for international cooperation, Sofinsky suggested, would be language study. He quoted from a communique that had been issued in May, 1972, during the visit of former President Nixon: "The U. S. side notes the diffusion of the English language in the Soviet Union and will take steps to encourage the study of the Russian language in the U. S." In the Soviet Union, 12,000,000 people are studying English in secondary and higher educational institutions, and many others are studying foreign languages in all sorts of courses and circles. In the U. S., 35,000 people are studying Russian in a formal curriculum, and even if others were added who are studying it not for credit, the total would be only about 130,000. In 1973, Sofinsky said, he had visited a number of universities in the U. S. (as well as ETS) and had been told everywhere that funds for foreign-language instruction had been reduced. Not much of the "encouragement" mentioned in the 1972 communique could be seen. Currently, however, U. S. scholars are working with Soviet scholars at the Pushkin Institute of the Russian Language to produce textbooks and other materials for the study of Russian. Chauncey suggested that one way of increasing study of Russian in the U. S. would be to have more native-speaking teachers who also know English come to teach in U. S. schools, as is now done with French and German.

Cross commented on the inclusion of "technological aids to education" on the Institute's list of research topics. Although she had found, during the visit, considerable concern with pedagogical methods, she was unable to find out much about the kinds of improvements being made in instruction. However, she had learned that a great deal of work was being done in faculty retraining, similar to what is called "faculty development" in the U. S., and she spoke of the importance of including this topic in any future exchange. Sofinsky added that every faculty member attends a course for improvement of skills at least once every seven years, and the goal was to increase that to once every five years.

Spurr mentioned that, as the deputy minister was no doubt aware, there was no organization in the U. S. comparable to his ministry. There were 50 different state systems of higher education and many institutions not operated by any state. Consequently, the U. S. delegation could not speak for the U. S. higher educational system as a whole. Nevertheless, its members had many contacts with educational organizations, and he was sure that a program of cooperation could be worked out.

Sofinsky commented that the U. S. system of higher education might be more centralized than the Soviet. The Soviet Union has

15 constituent republics, "all sovereign and independent," and about 100 ministries, many of which have their own vuzes. Each university is independent in that it selects its faculty, admits its students, and has its own program and curriculum. Minvuz exercises only a scientific-methodological control over the vuzes; it approves model curricula in order to maintain the level of quality of higher education. In the U. S., on the other hand, Educational Testing Service develops admissions tests which are common throughout the country, so the system of higher education there is actually more centralized. However, differences between the systems are not obstacles to cooperation.

Feldmesser pointed out that, although ETS does administer an aptitude test that is taken by about one million students each year, each vuz decides for itself whether to require applicants to take the test and, if it does, how much weight to put on the scores. Also, there is another large organization, the American College Testing Program which administers college-entrance examirations to about one million students a year, too. And many vuzes do not require applicants to take either of these tests. So there is probably at least as much decentralization of higher education in the U. S. as in the Soviet Union--which is not to say that decentralization is necessarily "better," or that the visit of the U. S. delegation was intended to determine which system was "better."

Spurr said he had been particularly impressed during the visit with the fact that sensible and dedicated people have seen many of the same problems in education that people have seen in the U. S. and in each country good ways for dealing with those problems have been worked out within the context of the respective histories and philosophies. "I know there is much we can learn from the Soviet system of higher education, and we hope that the Soviet Union can learn something from us." Sofinsky expressed agreement with these sentiments.